

**West Douglas Herd Area Amendment
to the
White River Resource Management Plan**

ENVIRONMENTAL ASSESSMENT

(CO-WRFO-05-083-EA)



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**Department of the Interior
Bureau of Land Management
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Executive Summary

This environmental assessment analyzes the environmental impacts of proposed alternatives to amend decisions in the White River Resource Management Plan (RMP) concerning management of wild horses in the West Douglas Herd Area. The West Douglas Herd Area is located in Northwestern Colorado, southwest of the town of Rangely, and approximately 50 miles north of Grand Junction. The Herd Area encompasses 123,387 acres of federal land managed by BLM, and 4,754 acres of private land (see Map 1-1). All of the planning area is within the White River Resource Area, and within Rio Blanco County, Colorado. (For a definition of Herd Area and Herd Management Area see page 11)

The purpose of the RMP Amendment is to identify whether it is feasible at this time to manage wild horses in the West Douglas Herd Area, while protecting resource values, providing for multiple uses, and improving the health of public lands. Retention of horses would change the status of the project area from a Herd Area to a Herd Management Area (Definitions on Page 6). In both Herd Areas and Herd Management Areas horse distribution is limited to the area within the designated boundary and to public lands only.

In accordance with NEPA, the purpose of this document is to inform BLM decision makers and the public about the impacts associated with the proposed alternatives and to recommend practical and reasonable recommendations for the selected alternative.

The previous draft amendment (2004) examined eight alternatives. Six alternatives addressed managing a varying range of wild horses. Alternative C, of the previous draft amendment, proposed managing a herd of between 29-60 wild horses within their preferred habitat surrounding Texas Mountain. This alternative proposed lease stipulations on human development in an effort to protect key and preferred wild horse habitat. *(Human development in this document is defined as any impacts to the public lands related to human use. These uses can include oil and gas development, livestock management, and recreational use).* As 93% of the herd area is currently leased, new lease stipulations could not be added to provide protection to horse habitat. Public and internal BLM comments questioned whether this alternative could be modified to allow a herd of horses to be managed without stipulations, using the entire herd area.

Considering the planning criteria, issues, and concerns, BLM developed two alternatives (Alternatives A and B). Alternative A carries out the White River ROD/RMP for removal of horses by 1997. Alternative B, of this Amendment addresses the above comments and proposes the creation of a Herd Management Area, to manage a herd of 29-60 wild horses. This alternative recognizes the current distribution of horses surrounding Texas Mountain, and encourages dispersal throughout the herd management area. Horses would be managed within the parameters of a thriving natural ecological balance, and within the constraints of maintaining current and projected resource uses in the area. No stipulations on human development would be applied. Wild horses would be provided a forage allocation derived from the permitted use. In the event that problems are encountered in the management of horses, i.e. horses leaving the Herd Management Area or public land health standards are not met, mitigation such as water developments, fences and vegetation treatments would be implemented in an effort to correct the problem. Monitoring studies will be conducted and the long term appropriate management level (AML) for the Herd Management Area will be adjusted based on the results of this monitoring.

Section 1: Purpose and Need

1.1 Introduction

The purpose of the West Douglas Herd Area Land Use Plan Amendment is to identify whether it is feasible at this time to manage wild horses in the West Douglas Herd Area of the White River Resource Area, while protecting resource values, providing for multiple uses, and improving the health of public lands. The Bureau of Land Management (BLM) initiated this planning process to determine whether it should amend decisions in its Resource Management Plan (RMP) concerning management of wild horses in the West Douglas Herd Area.

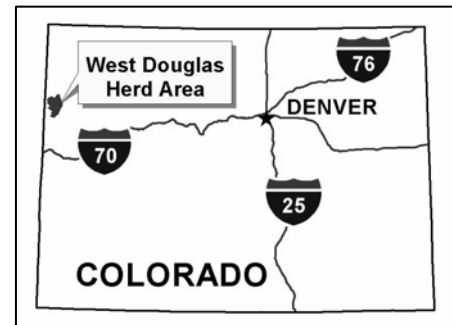
1.2 Where is the West Douglas Herd Area?

The West Douglas Herd Area is located in Northwestern Colorado (see Map 1-1), southwest of the town of Rangely (See Map 1-2). It is approximately 50 miles north of Grand Junction.

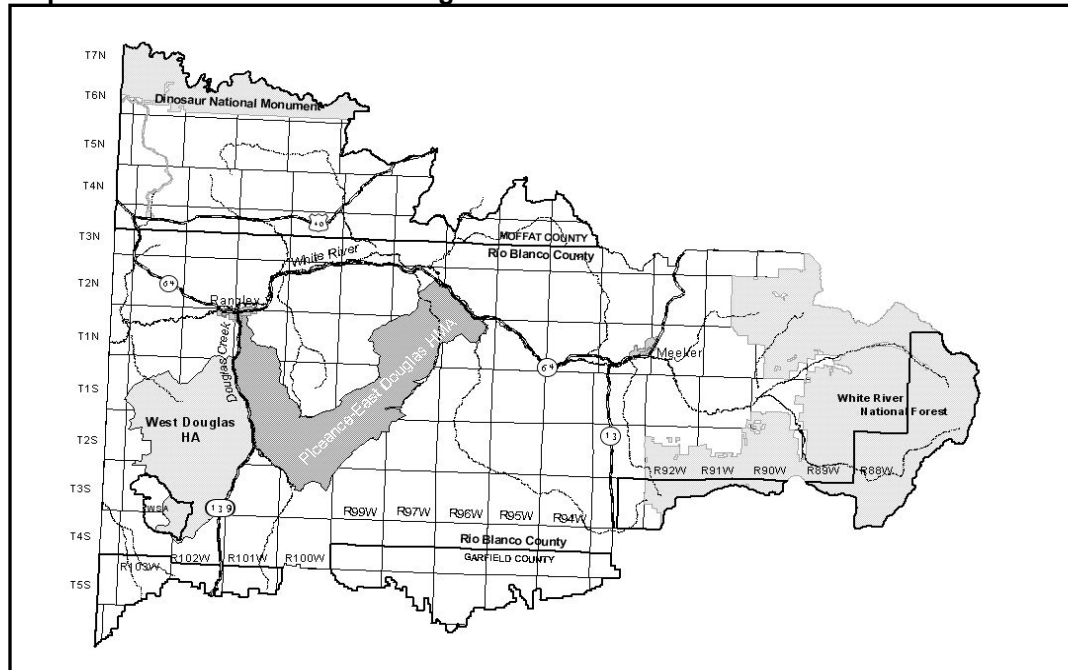
1.3 Geographic Scope of the Planning Area

The planning area is the West Douglas Herd Area, whose boundaries are described and depicted in the White River Record of Decision and Approved Resource Management Plan (ROD/RMP), approved July 1997. The Herd Area encompasses 123,387 acres of federal land managed by BLM, and 4,754 acres of private land. All but 15 acres of the private land are split estate on which BLM manages the federal mineral rights. All of the planning area is within the White River Resource Area, and within Rio Blanco County, Colorado (see Map 1-2). Note that, as it appears on Map 1-2, the southwestern boundary of the herd area bisects the Oil Springs Mountain Wilderness Study Area (WSA).

Map 1-1: Location of the West Douglas Herd Area



Map 1-2 Location of the West Douglas Herd Area within the White River Resource Area



1.4 Background/History

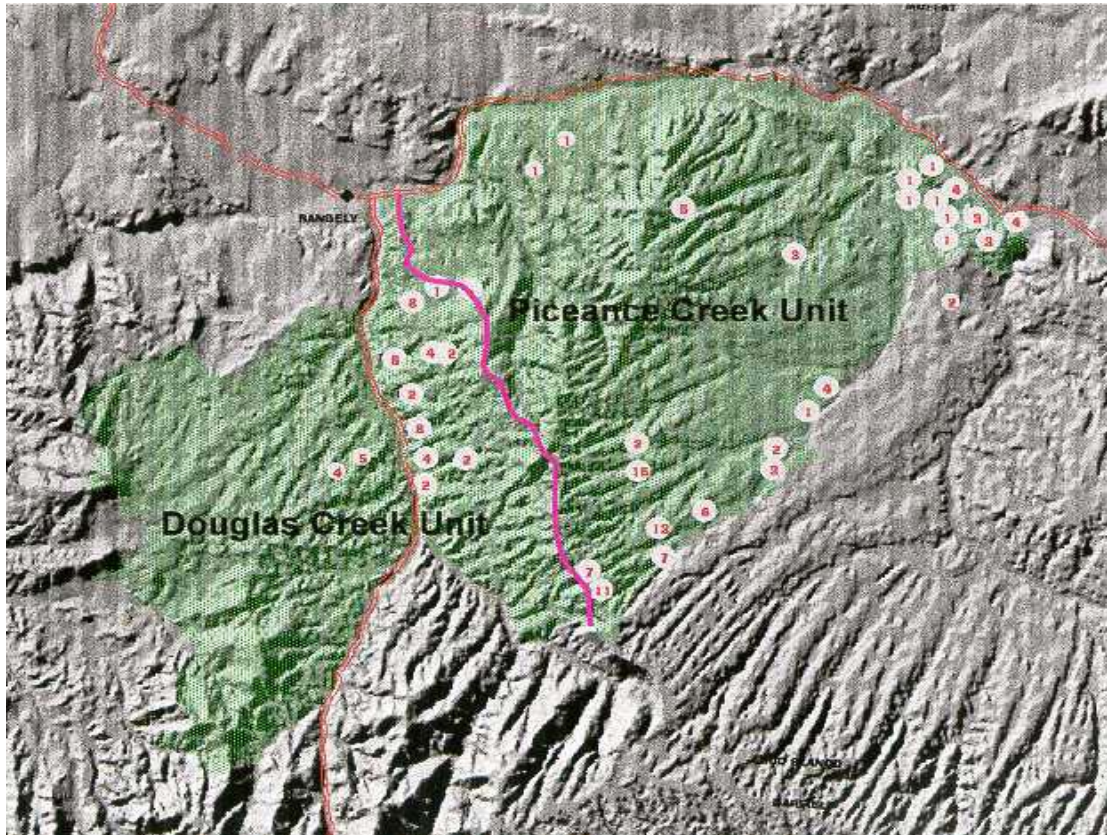
Comments on the previous Amendment identified a need for a detailed description of previous Land Use Planning efforts, relative to the West Douglas Herd Area. Below is a detailed summary of past planning efforts.

In 1971 the Wild and Free Roaming Horse and Burro Act was passed. In 1974 BLM conducted a census of the wild horses existing in the White River Resource Area by the herd units as required by the 1971 Act and later identified in the White River RMP of 1997. That census showed the following information in Table 1-1.

Table 1-1. 1974 Census Information

Location	Number Horses Observed in 1974
Piceance - East Douglas Herd Management Area	133
West Douglas	9
North Piceance	2
Outside all identified Herd and Herd Management Areas (Pasture A - Square S)	2
Total	146

Map1-3 Showing Original Piceance and Douglas Creek Units and Original Wild Horse Inventory

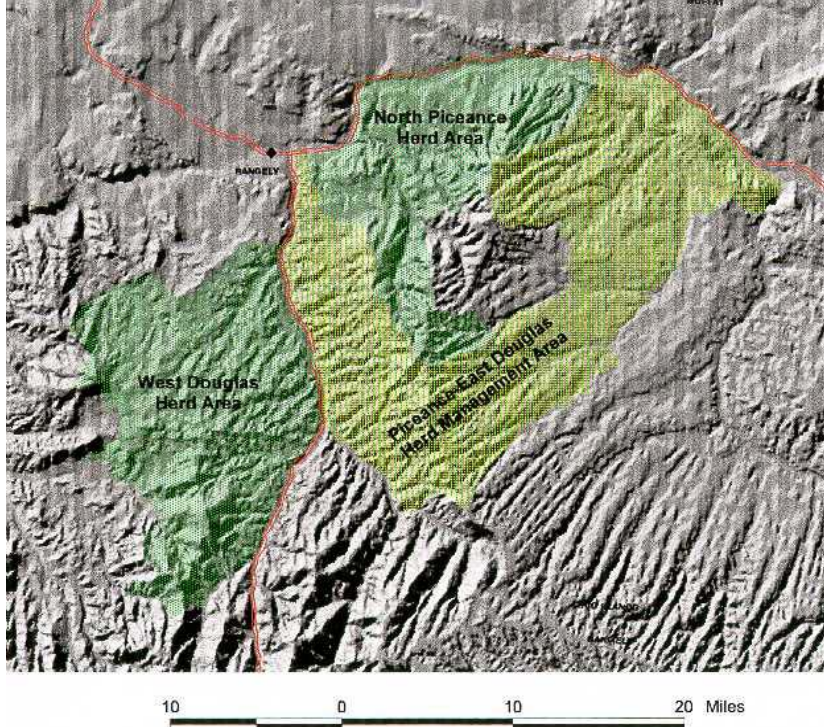


In 1975 BLM drafted a White River Resource Area (WRRRA), Management Framework Plan (MFP) based on the information developed in the 1975 Unit Resource Analysis (URA). The 1975 URA identified two wild horse herd units, the Douglas Creek Herd Unit and the Piceance Basin Herd Unit. The 1975 Unit Resource Analysis further identified wild horse utilization/distribution problems resulting from human development and human population increases projected for the future. Based on this analysis the decision of the 1975 Land Use Plan was to: 1) Remove wild horses west of Douglas Creek, 2) Retain Wild Horses East of Douglas Creek, 3) Construct a fence along the Douglas Creek road (State Highway 139) from Rangely up East Douglas Creek."

From 1978 through 1980, another planning effort was undertaken to update the 1975 MFP. This update was driven by court ordered environmental impact statements requiring area specific analysis of the livestock grazing program. A 1980 URA again identified two wild horse herd units, the Douglas Creek Herd Unit and the Piceance Basin Herd Unit. Based on the 1980 URA the Piceance/East Douglas Area was selected for management of wild horses because of a "lower density of both developed and undeveloped energy resources than any other area within the two wild horse herd units" and, "[t]he topography of the proposed area is highly suited to the needs of wild horses... offers both summer and winter ranges and provides all other elements necessary for the survival of wild horses."

The 1980 MFP established the Piceance/East Douglas Herd Management Area and also recommended that all horses west of Douglas Creek (later designated as the West Douglas Herd Area) be removed, "[b]ecause, the increase in oil and gas activities in this area warrants removal of those horses." Gas development activity is causing horses to disperse into areas where they did not exist prior to 1971. The (Wild Horse and Burro) Act states that horse range or habitat will not expand beyond the area occupied when the law was passed." These areas are shown on Map 1-4 below.

Map 1-4. Herd Area/ Herd Management Area Map



The 1981 White River Resource Area, Herd Management Area Plan reiterated the 1980 Management Framework Plan and 1981 Grazing Environmental Impact Statement decisions to remove all horses west of Douglas Creek and in allotments outside the Herd Management Area.

In 1983 State Highway 139 was fenced separating the East Douglas Portion of the Herd Management Area from the West Douglas Herd Area.

In 1985 the WRRRA Piceance Basin Resource Management Plan was developed for the Piceance Basin to analyze expected impacts resulting from oil shale development. Wild horse management would continue according to decisions approved in the 1981, Piceance-East Douglas Herd Management Area Plan.

The 1997 WRRRA, Resource Area Management Plan approved by the State Director, July 1, 1997 is the current land use plan decision process for the White River Resource Area and the Record of Decision for the White River Resource Area. The decision for horse management was to "[m]anage for a wild horse herd of 95-140 wild horses on 190,130 acres within the Piceance-East Douglas Herd Management Area (HMA) so that a thriving ecological balance is maintained for plant and animal species on that range." "The boundary of the Piceance-East Douglas HMA will be expanded to include the Greasewood allotment (presently a part of the North Piceance Herd Area). "Management also concluded "[t]he North Piceance and West Douglas Herd Areas [would] be managed in the short-term (0-10) years) to provide forage for a herd of 0 to 50 horses in each herd area. The long term objective (+10 years) will be to remove all wild horses from these areas."

In 2001, the Colorado State BLM Office directed the White River Field Office to review the decision in the 1997 White River ROD/RMP regarding management of wild horses in West Douglas Herd Area. In response, this RMP amendment planning process will be specific to the issues of the West Douglas Herd Area and will allow for an in-depth analysis of alternatives focused just on this area and will be open to public participation.

1.5 Issues and Concerns

BLM identified the issues and concerns listed below from internal scoping, comments we received during three public scoping meetings, and comment letters we received from interested parties. Details about the issues and the public scoping process can be found in the Scoping Report which is available at the White River Field Office.

As a result of internal and public scoping BLM identified eleven issues and concerns:

- **Range of Wild Horse Management Options and Statutory Requirements.** Have all reasonable management options been considered and analyzed? Do management alternatives meet statutory requirements?
- **Wilderness.** Can wild horse management activities and wilderness values within Oil Spring Mountain Wilderness Study Area co-exist?
- **Human Development.** Will human development impact wild horses?
- **Forage Allocation.** How will forage be allocated to livestock, wild horses and wildlife?
- **Wild Horse Distribution Outside of Herd Area.** How can wild horses be prevented from moving outside the Herd Management Area and onto private lands, in accordance with the Wild and Free Roaming Horse and Burro Act?
- **Conflicts with Hunting.** Helicopter use for gather operations during hunting season could scare away large game. In addition, this issue includes all potential impacts of the wild horse herd on big game and hunting.

- **Implications for Watersheds.** Will wild horses cause damage to watersheds and watering sites that are critical to livestock and wildlife? Public scoping comments revealed an additional concern that existing water sources may not be enough to support, or encourage proper distribution of a wild horse herd.
- **Protection of Cultural Resources.** Will management of wild horses impact the numerous cultural sites and artifacts found throughout the West Douglas Planning Area?
- **Socio-Economics.** Will the management of wild horses affect social or economic status of the region?
- **Herd Viability.** Does the West Douglas Wild Horse Herd possess the genetic variability necessary to maintain a viable, self-sustaining population in the long term? What actions can be taken to increase herd genetic variability?
- **Rangeland Health.** The Wild and Free Roaming Horse and Burro Act (PL-92-195) requires BLM to maintain a thriving natural ecological balance when managing wild horses. Any management plan that BLM develops for wild horses must include methods to prevent vegetation damage, as well as a plan to monitor rangeland health.

1.6 Planning Criteria

The Code of Federal Regulations (CFR) for Resource Management Planning requires development of criteria during land use planning to “ensure that it is tailored to the issues previously identified and to ensure that unnecessary data collection and analyses are avoided” (43 CFR 1610.4-2). BLM developed the planning criteria listed below for this planning process. These criteria were made available for review during initial public scoping.

- The planning area is defined as the public and private lands within, or immediately adjacent to the West Douglas Herd Area as specified in the White River Resource Management Plan (July 1997).
- All alternatives must comply with the Wild and Free Roaming Horses and Burros Act and 43 CFR Part 4700.
- Management of wild horses will achieve a thriving natural ecological balance (TNEB).
- Herd genetic viability will be managed for.
- The forage allocation within the planning area for wild horses will be derived from the livestock Permitted Use. Permitted Use is the forage allocated by an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in Animal Unit Months (AUMs).
- Current vegetative assessments for the planning area are valid and no additional vegetative inventory will be necessary.
- The Environmental Assessment will include economic and fiscal impact analyses.
- Decisions in the White River Resource Management Plan and BLM Interim Management Policy regarding management of the Oil Springs Mountain Wilderness Study Area for wilderness character and values remain applicable.
- The Oil and Gas Reasonable Foreseeable Development scenario found in the 1997 White River Proposed Resource Management Plan remains valid and will be used for analysis.

1.7 Land Use Planning for Wild Horses and Burros

The H-1610-1 Land Use Planning Handbook identifies the following (see 43 CFR 4700):

a. Herd Areas: Herd Areas (HAs) are limited to areas of the public lands identified as being habitat used by wild horses and burros at the time of the passage of the Wild Horse and Burro Act as amended (16 U.S.C. 1331-1340).

b. Herd Management Area Designation: Herd Management Areas (HMA) are established only within Herd Areas, or portions of a Herd Areas within which wild horses and/or burros can be managed for the long term. For Herd Management Areas identify the following: (1) Initial and estimated herd size that could be managed while still preserving and maintaining a thriving natural ecological balance and multiple-use relationships for that area. (2) Guidelines and criteria for adjusting herd size.

c. Herd Areas Not Designated as Herd Management Areas. Where appropriate, the LUP may include decisions removing horses from all or part of a herd area.

1.8 Conformance with Land Use Plan

The BLM Colorado State Director approved the White River Record of Decision and Approved Resource Management Plan (ROD/RMP) on July 1, 1997. The ROD/RMP describes general decisions for management of 1.5 million acres of federal land, and 365,000 acres of split mineral estate within the White River Resource Area. The ROD/RMP also specifies management for removal of wild horses in the West Douglas Herd Area by 2007. If an alternative to retain wild horses is selected, it will become an amendment to the RMP, and will require a Record of Decision specific to the amendment.

1.9 Relationship to Statutes, Regulations, and Other Plans

The Federal Land Policy and Management Act (FLPMA) of 1976: FLPMA directs that the Public Lands be managed on the basis of multiple use.

Wild, Free Roaming Horses and Burros Act of 1971 (as amended by FLPMA of 1976 and the Public Rangelands Improvement Act of 1978): This act provides direction for BLM to manage wild horses and recognizes that [wild horses] contribute to the life forms within the Nation and enrich the lives of the American people; and that these horses...are fast disappearing from the American scene."

43 CFR 4700-4710: The purpose of these regulations is to "implement the laws relating to the protection, management, and control of wild horses and burros under the administration of the Bureau of Land Management."

43 CFR 1610: The purpose of these regulations is to provide guidance for preparation and amendment of resource management plans.

43 CFR 3101.1-2: The lessee of an existing oil and gas lease "shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to: Stipulations attached to the lease; restrictions deriving from specific nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed. To the extent consistent with lease rights granted, such reasonable measures may include, but are not limited to, modification of siting or design of facilities, timing of operations, and specifications of interim and final reclamation measures. At a minimum, measures shall be

deemed consistent with lease rights granted provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year."

Strategic Plan for Management of Wild Horses and Burros on Public Lands (1992), and the Strategic Plan for the Management of Wild Horses and Burros in Colorado (1993): BLM will follow program policy and guidance included in the 1992 "Strategic Plan For Management of Wild Horses and Burros on Public Lands", and in the 1993 "Strategic Plan for the Management of Wild Horses and Burros in Colorado."

43 CFR 4180.1: Fundamentals of Rangeland Health: The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management needs to be modified to ensure that watersheds are in, or are making significant progress toward properly functioning physical condition, including their upland riparian-wetland and aquatic components. Soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and landform. Maintain or improve water quality, water quantity and timing and duration of flow. Ecological Processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained or there is significant progress toward their attainment in order to support healthy biotic populations and communities. Water Quality complies with State water quality standards and achieves or is making significant progress toward achieving established BLM management objectives such as meeting wildlife needs and that habitats are or are making significant progress toward being restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidates and other special status species.

1.10 National Environmental Policy Act (NEPA) Compliance

This EA will serve as the NEPA document for the actions presented in this Plan Amendment. At the time projects are implemented, BLM will assess whether further NEPA analysis is necessary. BLM will prepare supplemental NEPA documents if this EA does not adequately analyze the impacts of future implementation actions.

Section 2: Description of Alternatives

2.1 General: In this amendment two alternatives are presented and analyzed in detail. These alternatives were developed from information contained within the previous draft amendment along with public input. These alternatives provide the best opportunity for determining if wild horses should be managed within the West Douglas Herd Area. Section 2.2 details these alternatives.

2.2.1 Alternative A (Implement Existing RMP Direction): As described in the 1997 RMP decisions, the wild horse population would be limited to a range between 0 and 50 wild horses. BLM would remove all wild horses from the Herd Area and from areas where horses have relocated outside the Herd Area by 2007. Activity plans would be prepared for all wild horse removals. The 1997 RMP further specifies allocation of up to 750 AUMs of forage until removal of wild horses is completed. There would be no need for long-term forage allocation for wild horses. The current Permitted use for livestock within the herd area is approximately 9,080 animal unit months (AUMs). All other resources would be managed in accordance with the existing situation (current Land Use Plan).

2.2.2 Alternative B (Wild Horse Herd within the entire Herd Area): Wild horses would be managed within the entire West Douglas Herd Area encompassing 123,387 acres. The entire Herd Area would be designated a Herd Management Area (HMA). The herd would be managed with an initial Appropriate Management Level (AML) range between 29 and 60 wild horses. When the population increases to 60 or more adult horses BLM will reduce the herd to the lower AML range of 29 horses. Wild horses would be allocated 750 AUMs of forage. Herd genetics would be strengthened with the periodic, scheduled introduction of wild horse mares from other HMAs. Mares introduced into the herd would be selected from locations with similar climate, topography and habitat to encourage successful integration into the herd. DNA analysis would be conducted during scheduled gathers, or as needed to monitor genetics until such time as the herd exhibits long-term, desirable genetic viability. Recognizing the herd's low genetic variability and relatively small herd size, immunocontraception would not be applied to the West Douglas herd. There would be no new stipulations for human development.

Table 2-1: Summary of Variables among Alternatives

Variables	Alternatives	
	A Implement Existing RMP Direction	B Wild Horse Herd Entire Area
Forage Allocation to Wild Horses (AUM) Average Yearly Use	0	750
Forage Allocation to Livestock (AUM)	9,080	8,330
Wild Horse Population (AML)	0-50 (RMP) Zero by 2007 Currently 60-151	29-60
Acres Public Land Allocated to Wild Horse Management	123,387 before 2007 Zero by 2007	123,387
Fencing	None	None
New Oil & Gas Stipulations (APD & New Leases)	None	None
Genetic Enhancement	None	Yes

Section 3: Affected Environment

Generally the West Douglas Herd Area is characterized as a canyon/plateau geographic type. Elevations range from 6,300 feet near Rangely to 8,000 feet on Oil Spring Mountain. Precipitation ranges from 11 inches at the lower elevations to 18 inches at the higher elevations. Vegetation is highly varied as a result of topography and precipitation. The lower elevations consist primarily of greasewood bottoms. Mid-elevations are Pinyon/juniper woodlands and sagebrush parks. Upper elevations are composed of mountain shrub and Douglas-fir communities. There are few natural waters (springs, seeps, creeks) with the majority of water provided by stock ponds scattered throughout the herd Area.

3.1 Wild Horses:

Wild Horse History: The 1971 Wild and Free Roaming Horse and Burro Act mandates that wild horses be managed in areas where they existed at the passage of the Act. Horses that relocate outside management boundaries, or onto private lands, are prioritized for removal. The White River Resource Area completed the first land use plan in 1975. Two wild horse units were identified in the 1975 Plan: the Piceance and Douglas Creek Units. The Douglas Creek Unit included what is now the East Douglas portion of the Piceance/East Douglas Herd Management Area and the West Douglas Herd Area. The East and West Douglas portions were physically separated by completion of a highway right-of way fence in 1983. The planning process established the boundary of the West Douglas Herd Area by considering the location of the horses within what was believed to be physical boundaries consisting of fences and topographic barriers. All Land Use Plans since 1975 contained the decision that wild horses would not be managed in the area now identified as the West Douglas Herd Area. All Land Use Plans since 1974 recognized wild horses would be managed within the Piceance/East Douglas Herd Management Area, as this area contained the proper mix of habitat in regards to summer/winter ranges, water resources, and contained 91% of the horses at the passage of the act. The White River Field Office currently manages a population of between 135 and 235 wild horses on 190,000 acres in the Piceance-East Douglas Herd Management Area.

Wild Horse Herd Distribution: The initial aerial census recorded 9 wild horses in the area now recognized as the West Douglas Herd Area (refer to map 1.4b page 3, for the 1974 aerial census map). These animals were located in the central eastern portion of the West Douglas Herd Area. Additional horses were identified in the Cottonwood Creek and Texas Mountain vicinities by the local public during scoping meetings held during the planning stages of the 1975 Management Framework Plan.

Since the early 1980's varying numbers of wild horses have drifted outside the Herd Area with the earliest sightings occurring on the ridge above Blue Jay Canyon. In 2001, when the herd was estimated at 113 head, 57 horses were documented outside the Herd Area expanding south to the top of Roan Plateau, and west to the Colorado-Utah border. The 2002 census recorded 15 of the 77 horses tallied located outside the Herd Area. The February 2005 census recorded 6 of the 97 horses outside the Herd Area boundary. 3 of these horses were located approximately 4 miles west of the Herd Area boundary and the other 3 horses were immediately adjacent to the Herd Area boundary fence.

Total removals have been attempted starting in the early 1980's, with a concerted attempt in 1985. The 1985 attempt was unsuccessful for a variety of reasons including helicopter wary horses, horses inhabiting inaccessible locations and the size of the search area (approximately 20,000 acres). Gather projects aimed at total removal completed since 1985 were also unsuccessful due to a variety of reasons. Not all gathers have been targeted for total removal. The 2001 gather project concentrated on the removal of 53 horses that had relocated outside the Herd Area boundary. At least 4 horses remained outside the Herd Area at completion of the 2001 gather.

Wild horse herd distribution has been shifting to the Texas Mountain vicinity since the early 1980's. The 1981 inventory documented 92 horses in the Herd Area with 52 (69%) using the northern portion and 36 using the area around Texas mountain. The 1985 inventory showed 65% of the horses in the Texas Mountain area. In the 1996 survey 100% of the horses were using the Texas Mountain area. The 2005 census documented all but 7 horses in the southern half of the HA in the vicinity of Texas Mountain. The 2005 inventory map is included in the Appendix as Map B-1.

The current distribution of wild horses is attributable to a variety of factors including:

Human manipulation - Wild horse capture through the 1980's concentrated on removing horses from the northern Herd Area principally because the northern terrain is less rugged and is more road-accessible. The majority of the horses in the northern Herd Area were removed by 1985 with small groups continuing to use their northern range into the early 1990's. The last of these horses is the Vandamore Draw band. This small band normally summers on Texas Mountain but for the last few years has instead remained along the Main Stem Douglas Creek.

Wild horse habitat variables -The West Douglas Herd Area contains a habitat imbalance long on winter range and short on summer range. The lack of perennial waters on the winter range augments wild horse preference for higher elevation habitat during the summer months. Since the summer range is concentrated in the southern portion of the herd area, horses through time have shifted their habitat preference south since entering the area in the mid 1970's. Wild horses have not attempted to reoccupy the northern part of the herd area.

Human disturbance - The Douglas Creek Arch is a prolific zone for energy production. Energy production efforts in the north-central portion of the herd area have been substantial. While wild horses can certainly be found in proximity to developmental activities, heavy industrial activity in the north appears a factor in the horse's preference for ranges to the south.

Competition with livestock - Livestock primarily utilize the northern half of the Herd Area where the terrain is more accessible to livestock and to the ranchers managing the livestock. Decreased livestock pressure in the southern Herd Area, coupled with the decreased human presence associated with livestock management may influence the horses' preference for the southern portion of the Herd Area.

Preferred habitat - For wild horses in the Texas Mountain area includes; Mailbox, Waggoner and Sand Draw chainings; the bottoms of Texas Creek; the mountain shrub hillsides around Texas and Oil Springs Mountain and the connecting habitat. A total of 2,179 AUMS are available for cattle and wild horses in the Texas Mountain vicinity. Approximately 60% of this area is considered preferred habitat for horses. The preferred habitat is shown in Appendix B-1.

Population Census: The earliest aerial survey (helicopter) was completed in February 1974. The February inventory recorded 9 horses located in the Big Bull Draw area. The local public later identified two other areas in the Herd Area that supported wild horses: Texas Mountain (7 horses) and Cottonwood Draw (5 horses) Since 1974 herd numbers have increased as high as 151 head (in 1996). The most recent census, completed in February, 2005 documented 97 horses: 72 adults and 25 yearlings. The census map is shown in Appendix B-1.

The White River Field Office completed six gathers in West Douglas Herd Area between 1981 and 2001, removing a total of 372 horses between these dates. Table 3-1 below contains census data, estimated population size for years between census, gather years, and the number of horses removed during each gather.

Table 3-1: Wild Horse Population History of the West Douglas Herd Area

Year	Number Removed	Estimated Population	Year	Number Removed	Estimated Population
1974		9*	1990		50
1975		30	1991		61*
1976		40	1992		66*
1977		53*	1993		84
1978		68	1994		105*
1979		85	1995		126
1980		106	1996	60	151
1981	74	133*	1997		95*
1982		68*	1998	72	137
1983		82	1999		78
1984	45	98	2000		94
1985	45	59	2001	53	113
1986		32	2002		77*
1987		44	2003		85
1988		50	2004		95
1989	23	63	2005		97*

* Number observed in Aerial Counts; all censuses were conducted by helicopter

**All census data is prior to the census year foal crop

Projected population size

Dietary Habits of Wild Horses and Competition with Other Species

The National Research Council (NRC), established in 1916 by the National Academy of Sciences, completed an in-depth study of wild horses in the western states in 1982. Findings in the Council's report include the dietary and spatial overlap between wild horses and other ungulates occupying the same habitat. Horse dietary preferences over a range of vegetation types represented in the West Douglas Herd Area are listed in Table 3-2.

Table 3-2: Wild Horse Dietary Preferences

Vegetation Type	Season of Use	% Grasses	% Forbs	% Browse
Mountain Shrub	Annual	85	1	12
Pinyon-Juniper	Annual	89	0	
Sagebrush-Grass/ Pinyon-Juniper	Annual	94	0	5
Sagebrush-Grass (4 locations)	Annual	92.8	7	0.2
	Annual	95.9	3.6	0.3
	Annual	85.8	12.9	1.2
	Annual	95.2	2.5	2.4

NRC's results were obtained from studies conducted over all seasons under a variety of environmental conditions in vegetative types representative of the majority of wild horse habitat. The table illustrates that wild horses rely primarily on grass plant species and compete to a far lesser extent for browse and forb plant species. The report identifies that wild horses rely on forbs and browse plant species primarily during isolated spans of time when heavy snowfall limits

a horses' ability to reach the grasses. The NRC Report states that horses and cattle share the most similar dietary preferences and, as such, possess the highest potential to compete with one another for available forage, especially during dry years when plant nutrition is seasonally low. NRC recognizes dietary overlap between wild horses and elk, particularly during the winter months. NRC does not recognize notable dietary overlap between wild horses and deer with the exception of during the early spring months when grasses move from dormancy and become the preferred forage of livestock, big game and wild horses.

The NRC study concludes that wild horse and deer conflicts are more closely linked to dominance and displacement rather than dietary conflicts.

NRC identifies a difference between dietary overlap and spatial competition: ungulates can exhibit dietary overlap without negative impacts to the vegetative resource, or to species sharing the same resource. Competition only occurs when dietary overlap is coupled with a less than adequate supply of forage for user species.

Spatial Overlap and Competition:

Wild horse distribution is seasonally coincident with livestock, elk and mule deer in the Herd Area, and in the area proposed for management under alternative B. The NRC states that data related to forage preferences and competition between ungulate species does not provide adequate information to support decisions regarding forage allocations for wildlife, livestock and wild horses. Patterns of interaction between the user species are needed prior to determining management strategies addressing forage allocation. The report summarizes the following patterns of interaction between livestock, wildlife and wild horses:

1. The different species select mutually exclusive habitat types. There is no spatial interaction between the species.
2. The species have overlapping habitat preferences but segregate into distinct locations within their habitat.
3. The different species have overlapping habitat preferences and co-exist with one another. If the species have overlapping habitat preferences they do not compete with one another. If the species have overlapping forage requirements but are not present in sufficient numbers to deplete the forage reserves they do not compete with one another. If the forage is limited competition between the species will occur.

Herd Phenotype: The West Douglas wild horse is generally small (~14 – 14.2 hands high and 700-800 pounds), with a large, rounded jaw, straight to convex forehead, and a convex nose. Many of the horses have a deep chest, a short back and a sloping croup with relatively low set tail. The eyes are set wide apart and the ears are of average to short length.

Population Color Balance: Color variation in this herd has diminished between 1981 and the present. In 1981 the colors bay, black, grey, sorrel, and brown each contributed to at least 17% of the herd. The remaining 25% was composed of palomino, red and blue roan, buckskin, and pinto, and an occasional (3) albino. In 1996 the colors bay, brown, sorrel and black accounted for over 93% of captured horses. Three grey horses were captured, and removed. In 2001 74% of the horses captured were bay. The remaining 26% were sorrel, black and brown.

Decreased herd genetic diversity and genetic traits that exist in only trace frequencies likely contribute to the diminished variation in color. Natural selection and human selection are other probable reasons for the decrease in color variation. While colorful horses are desirable in that they serve as 'marker' horses during census and gather operations and are often more popular with adopters, herd health and survival cannot be directly linked to the expression of any particular color pattern within a population. Recognition is made that managing to encourage

rarer colors is secondary to managing for desirable herd social structure and individual reproductive fitness.

Population demographics: Unless otherwise indicated, the data discussed below has been compiled during gathers completed between 1981 and 2001, and during ground observations.

Foaling Rates and Foal Survival: The 2005 census recorded 26.5% of the horses observed were yearlings (young yearlings approximately 10 months of age). Gather data collected between 1981 and 2001 recorded between 20% and 26% of captured horses were foals under 6 months of age. The 20% - 26% range of foals captured during gather activities and the 26.5% yearling ratio observed during the 2005 census indicates a productive population. Foal survival will continue to be monitored during aerial census and during gather activities.

Sex Ratio: Historically, and continuing into 2001, the adult and foal sex ratio of captured horses has been close to 50% male and 50% female. The most recent gather statistics (2001) was the one exception with a sex ratio of 60% male and 40% female. Studies suggest that wild horse populations with long-term minimal human manipulation tend to favor a 40% male and 60% female ratio.

Herd Structure: Typical age structure for a wild ungulate herd is pyramid in shape, with each age group represented and the majority of horses present in the youngest age categories. The desired pyramid structure was recorded in the West Douglas herd during the original, 1981 gather of 110 horses with each age group under 15 years of age well represented. Foals accounted for 25% of the horses captured. Note is made that no horses over 15 years of age were captured in 1981, suggesting early mortality since it is unlikely that the horses were wizened to helicopters and avoided capture. Data collected in 1996 and 1998 showed similar herd age structure with 20% of the captured horses under one year of age and no horses over 17 years captured.

Genetic Ancestry: Wild horse herds historically have been founded by a limited number of horses which then contribute to the resulting makeup of the herd. Blood samples from horses captured in October, 2001 were analyzed by Dr. Gus Cothran, geneticist at the University of Kentucky to determine genetic ancestry and genetic frequency. (Cothran's analysis is available upon request from the White River Field Office and is included on the White River Office Wild Horse Web Page <http://www.co.blm.gov/wrra/wildhorse.htm>). The West Douglas herd shares genetic similarity with the gaited North American breeds (most common was the Mountain Pleasure Horse), followed by the Iberian (Spanish ancestry) breeds. The Iberian similarity Cothran believes is more linked to the Spanish ancestry of many of the North American breeds rather than being directly linked with the historic Spanish Barb ancestry.

While comparison of the West Douglas herd with the Piceance-East Douglas HMA 84 Mesa Sub-group showed some genetic similarity, the West Douglas herd does not appear to have originated solely, or even primarily from the Piceance-East Douglas herd. Of the three Colorado horse herds genetically compared with West Douglas, the Piceance-East Douglas herd ranks the lowest in genetic similarity to West Douglas. West Douglas horses are most closely linked with Colorado's Little Bookcliffs herd followed by the Sand Wash herd.

Genetic Viability Smaller herds (<200 horses in size) which experience some degree of isolation tend to lose genetic information through genetic drift (the loss of genetic material resulting from random mating of two individuals.) This loss of material has a negative impact on the genetic composition of a herd. According to the 2001 Cothran study, genetic variation in the West Douglas herd is among the lowest he has observed in any wild horse herd and the herd exhibits vulnerability to inbreeding depression. As much as

30% of herd diversity is present at notably low frequencies and risks being lost if the herd is managed under the current restrictions of low population size and no introduction of horses. Cothran states that herd variability can be preserved most effectively by managing as many horses as possible in the herd, and periodically introducing mares from other herds.

Two genetic variations were found in the West Douglas horses (PGD-D and A-be) that have seldom been observed in domestic horses and that were not detected in the adjoining Piceance-East Douglas herd. The PGD-D variant does not seem to be associated with any particular breed type. Cothran states that the A-be variant is "extremely rare" and that it has been seen in some standardbreds; possibly as few as 5 or 6 breeds. Cothran has not seen the A-be variant in any other wild horse herds. The horse possessing this marker was removed from the herd. It is unknown whether any of the horses remaining in the West Douglas herd possess this marker gene. Neither previous gather records nor Cothran's genetic analysis documents this herd as possessing 'undesirable' genetic traits.

3.2 Rangeland Management:

The descriptions for grazing management are organized by the two allotments within the planning area: Twin Buttes and Bull Draw. Map B-2 in Appendix B displays the boundaries of the Bull Draw Allotment and the pastures within the Twin Buttes Allotment. Twin Buttes allotment contains a total of 158,520 acres of which 113,825 acres are within the West Douglas herd area. Bull Draw allotment contains 9,564 acres and is entirely within the herd area.

BULL DRAW ALLOTMENT:

The Bull Draw allotment is used in conjunction with the East Douglas Creek Allotment. This allotment contains 9,526 acres of public land and 38 acres of private land that are not controlled by the permittee. The permitted use for the Bull Draw allotment is 187 AUMs. The grazing schedule for the Bull Draw allotment is 43 cattle during the period November 16, to March 30.

TWIN BUTTES ALLOTMENT:

The Twin Buttes Allotment contains 158,520 acres of public land and 17,540 acres of private land and is operated as an in-common allotment with two grazing permittees: James Steele and the Twin Buttes Ranch Company. James Steele runs 59 cattle during the period of November 1 to May 30 on the Twin Buttes allotment. The Twin Buttes Ranch Company runs 1157 cattle and is reliant on the public lands throughout the year. The Twin Buttes Ranch Co. manages livestock under an Allotment Management Plan completed in 1984, with a major revision completed in 1999. Twin Buttes Ranch Company is a cow/calf operation that also maintains a registered Hereford herd.

In general the northern part of the allotment (which is the West Douglas Herd Area) is lower in elevation with a milder climate and precipitation averaging about 10-12 inches per year. These lower elevations are used during the winter and spring. The middle elevations centered around Texas Mountain have a wide variance in elevation and vegetation associations. This area is used during the fall, winter, and spring. The southern part of the allotment has the highest elevations (8000 feet) with precipitation ranging from 15-20 inches/year. This area is used during the summer and fall.

Within the Texas Creek pasture there are approximately 1,150 acres of pinyon/juniper forage manipulations completed in the 1960's and 1980's to augment spring and fall livestock forage on the allotment. These chainings currently produce approximately 144 AUMs of forage. As horse distribution shifted to the south these manipulations became their preferred habitat during the fall, winter and spring months. The 2005 census recorded 32 horses located on the chainings, a

figure that equates to 320 AUMs, based on an eight month use period. Because of the limited forage there is competition between horses and livestock during the spring period, which results in decreased livestock management flexibility and shifts grazing use to other areas.

Table 3-2 identifies the Permitted use by pasture for the Twin Buttes Allotment:

Table 3-2: Twin Buttes Allotment Permitted Use by Pasture (Both Operators)

Pasture	Active AUMs	Suspended AUMs	Total AUMs
Cottonwood	1340	1130	2470
Lower Horse Draw	680	0	680
Water Canyon	3360	0	3360
Park Canyon	96	0	96
Texas Creek**	3550	57	3607
Red Rock*	140	0	140
West Douglas*	1095	0	1095
West Creek**	1289	0	1289
Total	11,550	1,187	12,737

* Pasture not within Herd Area.

** Part of pasture not within Herd Area

The grazing program for the Twin Buttes allotment is described in the Allotment Management Plan completed in 1999. This activity plan is based on the current Land Use Plan decision which calls for the removal of horses by 2007.

The following description is directly from the Twin Buttes Allotment Management Plan. A map of the grazing management units is included in Appendix B-2. Four units within the grazing management area have been identified within the lower winter and spring ranges. These units are Lower Cottonwood, Lower Big Horse, Lower Douglas Creek and Lower Texas Creek. These units are shown on Map B-2 in the Appendix. Livestock would be spread across the whole of the winter range from approximately November 1 to March 31. This will allow for livestock to use the rims and south slopes through the winter periods. On the Cottonwood Grazing Management (Unit #1), over a four year period, livestock would be cleared out by April 1, May 1, May 7, and May 31. On the remaining area of Cottonwood pasture, livestock would be progressively moved off the pasture ending May 31. On the Lower Horse Draw Grazing Management (Unit #2), over a four year period livestock would be cleared out by May 31, April 1, May 1, and May 15 (bottom areas cleared by May 7). On the Lower Douglas Grazing Management (Unit #3), over a four year period livestock would be cleared by May 15, May 31, April 1, and May 1. On the remaining Water Canyon pasture livestock would be progressively moved off the pasture ending May 31. On the W1/2 Texas Creek Grazing Management (Unit #4), over a four year period livestock would be cleared by May 1, May 15, May 31 and April 1. On the remaining area of W1/2 Texas Creek pasture livestock would be progressively moved off the pasture ending May 31.

The summer use period is June 5 to November 1 using the Red Rock, West Douglas and West Cr. Pastures (outside this planning area). Livestock are split, with half of the herd using the Red Rock and West Douglas pastures, and the remainder using the West Creek pasture. Cattle are rotated around each grazing area for two years and then the rotation would be reversed. Shown in Table 3-3 below is the grazing schedule for this grazing program.

Table 3-3 Twin Buttes Grazing Schedules:

Pasture	Grazing Use Period	
Cottonwood	March 1 to April 1 March 1 to May 1 March 1 to May 20 March 1 to May 20	November 1 to February 28
Lower Horse Draw	March 1 to May 20 March 1 to April 1 March 1 to May 1 March 1 to May 20	November 1 to February 28
Water Canyon	March 1 to May 20 March 1 to May 20 March 1 to April 1 March 1 to May 1	November 1 to February 28,
W1/2 Texas Creek	March 1 to May 1 March 1 to May 20 March 1 to May 20 March 1 to April 1	November 1 to February 28
E1/2 Texas Creek	March 1 to June 12	November 1 to February 28
West Creek	June 5 to November 1	
West Douglas Creek & Red Rock	June 5 to November 1	
Park Canyon Pasture (1)	March 1 to May 20	November 1 to February 28

Studies and Evaluation: Actual use records are maintained by the permittee throughout the course of each grazing season. These records provide the basis for actual use billings at the end of each grazing/billing period. Studies are being conducted on the allotment and include those necessary to make an evaluation of the effectiveness of the plan.

Table 3-4: Allotment Studies

Range Study	Completion Date	Frequency	Method	Responsibility
Actual Use	End of each grazing period	With each pasture change	Actual Use Record	Permittee
Utilization Mapping	3 Periods-winter spring, summer/fall	Every year	Key Forage plant	BLM
Condition and Trend	August/September	5 years	ESI, Photo Plots Daubenmire	BLM

AMP Evaluation: Evaluations of the AMP are made after each monitoring cycle.

Existing Water Developments: Within the West Douglas Herd area there are 69 stock ponds, 3 wells and four developed springs. The stock ponds range in age and usability and the majority are functional. None of the wells are functional.

3.3 Vegetation:

The vegetation section is presented under two landscape scales: by the planning area as a whole (West Douglas Herd Area) and by pasture analysis. The vegetation resource is projected on a planning area scale to show the extent of the vegetation communities, and under a pasture scale to provide location information for the vegetation standard for public land health standards.

The White River ROD/RMP objective for plant communities is to “[m]aintain healthy, diverse and sustainable rangeland and woodland plant communities. Sustain a landscape composed of plant community mosaics that represent successional stages and distribution patterns that are consistent with natural disturbance and regeneration regimes, and compatible with the goals identified in Standard Three of the Standards for Public Land Health.” The RMP also specifies that management of plant communities includes the following requirements:

- Land use approval actions will maintain a site threshold above the conservation threshold.
- Rangeland Desired Plant Communities will be managed at late-seral or healthy mid-seral.
- Fifty percent of the annual forage production will be preserved for plant’s life cycle requirements, watershed protection, visual resource enhancement, and food and cover requirements of small game and non-game species. The remaining 50 percent of the forage base will be allocated among predominant grazing users.

PLANT COMMUNITIES UNDER A PLANNING AREA PERSPECTIVE:

The native plant communities can be described by major plant associations that are characterized by one or two dominant plant species or an association of several dominant plant species. Distribution of these associations is influenced primarily by precipitation and elevation and, to a lesser extent, by aspect and soil type.

Table 3-5: Vegetation Communities by Ecological Site and Acreage

Ecological Site/ Range Site/ Woodland Type	Plant Community Appearance	Predominant Plant Species in Plant Community	Acres within Herd Area
Pinyon/Juniper	P/J Woodland	Pinyon, Juniper	43966 (36%)
Clayey Slopes	Hillside Bunchgrass/Salt Desert Shrub	Salina wildrye, Indian ricegrass, Sandberg bluegrass shadscale, sagebrush	40404 (32.7%)
Rock Outcrop	Barren	Very Scattered shrubs and grasses	16247 (13%)
Stony Foothills	Pinyon/Juniper	Pinyon, juniper, Indian ricegrass, beardless wheatgrass, prairie junegrass, low rabbitbrush	7822 (6%)
Rolling Loam	Sagebrush/grass Shrubland	Wyoming big sagebrush, winterfat, low rabbitbrush, horsebrush, bitterbrush, western wheat grass, Indian rice grass, squirreltail, June grass, Nevada and Sandberg bluegrass	4604 (3.7%)
Foothills Swale	Grass Shrubland	Basin wildrye, western wheatgrass, Indian ricegrass, big sagebrush, rubber rabbitbrush	3117 (2.5%)
Alkaline Slopes	Sagebrush/grass	Greasewood, Big Sagebrush, western wheatgrass, sand dropseed	2221 (1.7%)
Mountain Loam/D- fir	Douglas-Fir Forest Stands	North and West facing steep slopes of predominately Douglas-Fir	1196 (.9%)
Torrifluvents	Nearly Barren	Sparse Desert Shrubs and annual grasses	1164 (.9%)
Brushy Loam	Mountain Shrub type	Utah serviceberry, snowberry, mountain brome, elk sedge	742 (.6%)

Ecological Site/ Range Site/ Woodland Type	Plant Community Appearance	Predominant Plant Species in Plant Community	Acres within Herd Area
Deep Loam	Low Shrubs and Grass	Beardless wheatgrass, muttongrass, snowberry and sagebrush	756 (.6%)
Badlands	Barren	Low Desert Shrubs and grasses	506 (.4%)
Loamy Slopes	Sagebrush/grass Shrubland	Wyoming big sagebrush, Beardless wheatgrass, western wheatgrass and serviceberry	352 (.3%)
Dry Exposure	Grass Shrubland	Bluebunch wheatgrass, bottlebrush squirreltail, Colorado buckwheat, winterfat, Douglas rabbitbrush	149 (.1%)
Clay Salt Desert	Salt Desert Shrub	Douglas rabbitbrush, Indian ricegrass, Sandberg bluegrass shadscale, sagebrush	68 (.05%)
Salt Desert Breaks	Salt Desert Shrub	Indian ricegrass, galleta, needle and threadgrass, thickspike wheatgrass, Douglas rabbitbrush, shadscale	53 (.04%)
Clayey Foothills	Grass Shrubland	Western wheatgrass, green needlegrass, big sagebrush, dwarf rabbitbrush	20 (.02%)
Total			123,387

Within the Herd Area plant communities are classified by “range sites” or “non-range sites”. A range site is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production (National Range Handbook 1976). Range sites were classified by the present communities’ similarities to the climax communities. The following chart shows this classification:

Range Condition Class	Percentage of present plant community that is climax for the range site. (Based on Weight)
Potential Natural Community	76-100
Late Seral	51-75
Mid Seral	26-50
Early Seral	0-25

Listed below are the Ecological sites for the Herd area and Range Condition classification.

Potential Natural Community Condition Class:

Ecological Site	Acres
Alkaline Slopes	97
Dry Exposure	149
Total	246

Late Seral Condition Class:

Ecological Site	Acres
Alkaline Slopes	87

Brushy Loam	440
Clayey Foothills	20
Clayey Slopes	38,050
Deep Loam	729
Loamy Slopes	246
Rolling Loam	173
Total	39,745

Mid-Seral Condition Class:

Ecological Site	Acres
Alkaline Slopes	250
Brushy Loam	302
Clayey Salt Desert	68
Clayey Slopes	2,354
Deep Loam	27
Foothills Swale	972
Loamy Slopes	106
Rolling Loam	3,367
Salt Desert Breaks	53
Total	7,499

Early Seral:

Ecological Site	Acres
Alkaline Slopes	1,787
Foothills Swale	2,145
Rolling Loam	1,064
Total	4,996

Listed below are the non-range sites for the Herd area. Non-range sites are composed of forests, woodlands and non-grazable sites including badlands and rock outcrops. Non-range sites are generally not considered as range forage producing sites. The following tables list these sites and the acres associated:

Non-Range Sites:

Non-Range Sites (Successional Stage)	Acres
Torrifluvents (Not Classified)	1,164
Pinyon/Juniper Woodlands (Late Seral)	40,716
Douglas-fir-Spruce/Fir Forests (PNC)	1,196
Pinyon/Juniper Chainings & Fires (Early)	3,250
Badlands (Not Classified)	506
Rock Outcrop (Not Classified)	16,247
Stony Foothills (Pinyon/Juniper) (Late Seral)	7,822
Total	70,901

Summary: Within the West Douglas Herd area there is 52,488 acres (42%) identified as rangeland sites and 70,901 acres (58%) of non-rangeland sites. Of the rangeland sites 246 acres (5%) are considered Potential Natural Community; 39,745 acres (76%) are considered late-seral; 7,449 acres (18%) are considered as mid-seral; and 4,996 acres (10%) are considered early-seral. Refer to Table 3-6

Table 3-6. Serial Community Summary

	Acres by Seral Community					
	Potential Natural Community	Late Seral	Mid-Seral	Early Seral	Not Classified	Total
Ecological Sites	246	39,745	7,499	4,996	0	52,486
Non-Rangeland Sites	1,196	48,538	0	3,250	17,917	70,901
Totals	1,442	88,283	7,499	8,246	17,917	123,387

PLANT COMMUNITIES UNDER A PASTURE LANDSCAPE:***Analysis of Standards for Public Land Health***

Table 3-6, provides information on vegetation communities not meeting the standards for vegetation health. 6,404 acres of rangeland communities were determined to not be meeting public standards based on a pasture by pasture analysis. Vegetation associations in early-seral condition or declining trend were determined to not be meeting the vegetation health standard based on the indicators listed below.

- Noxious weeds and undesirable species are minimal in the overall plant community.
 - Condition: Within some West Douglas Herd Area plant communities' cheatgrass dominates.
- Native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability.
 - Condition: Key species are a minor component in these communities and do not ensure reproductive capability and sustainability.
 - Trend: Key species are in decline and do not ensure reproductive capability and sustainability.
- Plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations.
 - Condition: These communities do not present a mixed age class and do not sustain recruitment and mortality fluctuations of key species.
 - Trend: These communities are not sustaining recruitment and mortality fluctuations of key species.
- Photosynthetic activity is evident throughout the growing season.
 - Condition: The dominance of cheatgrass removes soil moisture abbreviating desired plant species growth during the growing season.
 - Trend: Increasing cheatgrass and decreasing litter volumes are decreasing available soil moisture abbreviating desired plant species growth during the growing season.
- Appropriate plant litter accumulates and is evenly distributed across the landscape.
 - Condition: Adequate litter is lacking.
 - Trend: Cover of litter is declining.

Table 3-6: Acres of Vegetation Achieving or Not Achieving the Standards for Public Land Health:

Current Situation (With approximately 10080 Wild Horses)			
Standard Vegetation Communities by Pasture	Acres Achieving or moving toward Achieving Standards	Acres Not Achieving Standards	Causative Factor
Cottonwood	13245	1099	Oil & Gas, Livestock Grazing
Lower Horse Draw	8943	1059	Oil & Gas, Livestock Grazing
Water Canyon	21838	1284	Oil & Gas, Livestock Grazing
East Texas Creek	20148	593	Oil & Gas, Livestock, Wild Horses
North Texas Creek	17058	831	Oil & Gas, Livestock
West Texas Creek	18241	1372	Oil & Gas, Livestock, Wild Horses
West Creek	7061	166	Oil & Gas, Livestock, Wild Horses
Water Hole	41	0	None
Park Pasture	882	0	None
Bull Draw Allotment	9526	0	Oil & Gas, Acres unknown
Total	116983	6404	

Non-Rangeland sites which make up 70,901 acres are considered to be meeting the standards.

Invasive/Non-Native Species (Noxious Weeds): Noxious weeds and their continued encroachment on BLM lands represent a serious threat to the continued productivity, diversified use and aesthetic value of White River Resource Area lands. We currently have an active noxious weed management program which emphasizes cooperation with Rio Blanco County, private landowners and BLM land users. This program is based in part on the 1990 White River Resource Area Noxious Weed Management Plan and the priorities established by the *Record of Decision, Vegetation Treatment on BLM Lands, 13 Western States* (BLM 1991). The current program uses an integrated management approach using: (1) chemical control using BLM approved chemicals, (2) biological control insect releases focused on leafy spurge, musk and Canada thistles, (3) mechanical control primarily digging of initial infestations of biennial noxious weed species, and (4) management to maintain competitive vegetation to prevent noxious weed invasion and spread. All aspects of this program have been effective where they have been applied.

Within the herd area there has been a number of outbreaks of noxious weeds. Noxious weeds of concern include cheatgrass, halogeton, thistles (bull, musk and Canada), knapweeds (spotted, diffuse and Russian), burdock, hoarycress, mullein, black henbane and houndstongue. Cheatgrass and halogeton are found throughout the herd area, with the primary control method being management to maintain competitive desirable species. On those noxious weed species which are controlled by direct control methods, there has been good success at containing the initial outbreaks.

3.4 Water Quality; Surface and Ground:

Surface water: The affected environment includes four watersheds: Douglas Creek, Evacuation Creek, Hells Hole and Cottonwood Creek. These watershed boundaries do not follow the pasture boundaries. Instead, the pastures fall within the watersheds. Therefore, listed in each description of the watersheds are the pastures. Within the herd area there are 52,570 acres of fragile soils and 645 acres of saline soils. Typically fragile and saline soils have a very high erosion potential. To date, the State of Colorado has not set criteria for determining thresholds for sediment loads. In Appendix B, Map B-3 shows fragile soils, and Map B-6 shows watersheds, and water sources.

Douglas Creek Watershed: The following pastures are within the Douglas Creek Watershed: East Texas, Bull Draw, Water Canyon, Lower Horse Draw, east half of West Creek, and east half of North Texas. There are 271,504 acres in the Douglas Creek watershed, 240,796 acres are Federal lands and 79,368 acres are on Federal lands within the West Douglas Herd Area. Douglas Creek is a tributary to the White River near Rangely, Colorado. The hydrologic setting of the Douglas Creek watershed ranges from relatively low lying, semi-arid lands yielding relatively little flow to steep, moderately high mountains that contribute major flows to Douglas Creek. There is very little flow or water quality data available for the tributaries to Douglas Creek. A USGS gauging station at the mouth of Douglas Creek collected instantaneous flows and periodic water quality data for the water years 1977, 1978 and 1995. For the period of record, data indicates, this drainage to be an ephemeral stream, flowing in direct response to snowmelt or rain. Spring runoff from the semi-arid lands generally occurs from March through early May and from the higher terrain into early June. Documented instantaneous peak flows from summer storms are 3,250 cfs on July 24, 1977, and 541 cfs on July 14, 1995. The major pollutants that the Douglas Creek watershed contributes to the White River are high sediment and salinity loads. USGS measured a late summer rainstorm on October 6, 1994. The instantaneous sediment load at the discharge of 6.3 cfs was 15,800 mg/l or 270 tons per day with a specific conductance of 4,750 umhos. Douglas Creek watershed is also listed in the White River ROD/RMP as a fragile watershed because it has soils that are both highly erosive and moderately saline.

The State has classified this segment of the White River and its tributaries (from above Douglas Creek to the state line) as a "Use Protected" reach. Its designated beneficial uses are "Warm Aquatic Life 2", "Recreation 2" and "Agriculture". The anti-degradation review requirements in the Anti-degradation Rule are not applicable to waters designated use-protected. For those waters, only the protection specified in each reach will apply. For this reach, minimum standards for three parameters have been listed. These parameters are "dissolved oxygen = 5.0 mg/l", "pH = 6.5 - 9.0" and "Fecal Coliform = 2000/100ml". In addition, this lower reach of the White River and its tributaries are also listed in the report as "Water Quality Limited Segments still requiring Total Maximum Daily Loads (TMDLs)", a list prepared by the state to fulfill section 303(d) of the *Clean Water Act* (CWA). This segment is one of several drainages the state has found to have reason to suspect water quality problems. The source of impairment for these tributaries is sediment. Currently the state does not have a numerical standard for sediment loads. Compliance and consistency with the State Nonpoint source management plan, State water quality standards and the Clean Water Act is mandatory. The CWA places responsibility for protection of water quality with the states and requires federal agency compliance.

Evacuation Creek Watershed: The following pastures are within the Evacuation Creek Watershed: south half of West Texas, west half of West Creek and Park Canyon. Evacuation Creek is a tributary to the White River in Utah. Evacuation Creek watershed is 114,800 acres. Of these acres 99,100 are Federal lands and of these, 24,700 acres are in the herd area. Within the herd area the tributaries to Evacuation Creek are Texas and Missouri Creeks, and Park Canyon. The hydrologic setting of the area ranges from relatively flat dissected basins to steep, barren side slopes in the upper reaches. Texas Creek is an ephemeral channel and is listed in the White River ROD/RMP as a fragile watershed. This listing is due to the highly erosive soils within the watershed and the fact that it contains soils that are moderately saline. Runoff from these semi-arid areas is generally from snowmelt occurring March through May and high intensity summer and late fall rainstorms. Instantaneous measurements of flow and water quality data are not available for these tributaries of Evacuation Creek.

Currently, there are two active soil stabilization plans within the Evacuation Creek watershed. The purposes of these activity plans are to reduce the present rate of soil erosion, control salinity transportation off-site, improve native plant cover, and aid the watershed's ability to retain precipitation.

As required by the Clean Water Act, the state of Utah has designated the White River from the Colorado-Utah state line to the confluence with the Green River as fully supporting of all of its

beneficial use classifications. This segment beneficial use classification is: "Recreation and Aesthetics, 2B" and "Aquatic Life Use Support, 3C". Four parameters have been listed on the Numeric Criteria for this reach. These parameters are "dissolved oxygen = 5.5 mg/l", "pH = 6.5 - 9.0", "maximum Fecal Coliform = 2000/100ml" and "maximum Total Coliform = 5000/100ml". For these parameters, a fully supporting rating indicated the criterion was not exceeded in more than 10% of the samples collected. Evacuacion Creek in Utah has not been assessed at this time. Data that is available for this drainage indicates total dissolved solids entering the White River to exceed state standards in 18 of the 19 samples collected. The mean concentration was 3,041 mg/l.

Cottonwood Creek Watershed: The following pastures flow into Cottonwood Creek Watershed: Cottonwood and a small northern portion of North Texas. There are 28,300 acres in the Cottonwood Creek watershed, 26,500 acres are Federal lands and 18,460 acres are Federal lands within the West Douglas Herd Area. Cottonwood Creek is an ephemeral drainage that is tributary to the White River downstream from Rangely Colorado. It is typical of a semi-arid setting, in that runoff comes during spring snowmelt and intense summer or late fall rainstorms and carries with it elevated sediment loads. A localized intense storm has the ability to erode upstream sediments deposited over a five to ten year period in just one event. Cottonwood Creek watershed is listed in the White River ROD/RMP as a fragile watershed because it is a low precipitation area with flashy intense runoff and soils that are highly erosive.

The State has classified this segment of the White River and its tributaries (from above Douglas Creek to the state line) as a "Use Protected" reach. Its designated beneficial uses are "Warm Aquatic Life 2", "Recreation 2" and "Agriculture". The anti-degradation review requirements in the Anti-degradation Rule are not applicable to waters designated use-protected. For those waters, only the protection specified in each reach will apply. For this reach, minimum standards for three parameters have been listed. These parameters are "dissolved oxygen = 5.0 mg/l", "pH = 6.5 - 9.0" and "Fecal Coliform = 2000/100ml". In addition, this lower reach of the White River and its tributaries are also listed in the report "Water Quality Limited Segments still requiring TMDLs", a list prepared by the state to fulfill section 303(d) of the *Clean Water Act*. This segment is one of several drainages the state found to have reason to suspect water quality problems. The source of impairment for these tributaries is sediment. Currently the state does not have a numerical standard for sediment loads.

Hell's Hole Watershed: A small western portion of the North Texas pasture flows into Hell's Hole Watershed. There are 7,486 total acres in the Hell's Hole watershed all of which are Federal lands; 831 acres are within the Herd area. The hydrologic setting of Hells Hole is similar to Cottonwood Creek and Hell's Hole is in the same stream segment identified by the State.

Ground water: The herd area is in the far western portion of the Piceance Basin. The principal bedrock aquifer which spans the Piceance Basin is the Uinta-Animas and the Mesaverde aquifers (Robson and Banta 1995). Groundwater recharge is primarily from snowmelt on high ground, which travels down through the upper aquifer system, the Mahogany Zone, and into the lower aquifer system. The groundwater then moves laterally and/or upward, discharging from both the upper and lower aquifer systems as near surface springs and streambed discharge.

The chemical quality of groundwater is dependent on the mineral composition and hydrologic properties of the aquifer. Factors such as surface contact, porosity and rate of water movement all influence water quality. Some sedimentary rocks contain large amounts of readily soluble minerals and combined with low permeability, result in higher concentrations of dissolved minerals in groundwater. Alluvial aquifers typically contain high sulfate concentrations; the Uinta-animas aquifer contains high sodium bicarbonate concentrations and the Mesa Verde aquifer contains high chloride concentrations (Taylor 1987).

3.5 Hydrology and Water Rights:

Spring inventories were completed in 1985, 1986 and 1987 for all of White River Resource Area to identify springs that could have water rights filed on them. Table 3-7 below shows the findings of this inventory. Identified are sixteen springs that are located within the West Douglas Herd Area. The locations of these springs are displayed on Map B-6 in Appendix B. The State of Colorado water courts do not except water filings on seasonal water sources so they do not have water rights filed on them. Twelve of the sixteen springs are in the Evacuation Creek watershed, while the other four are in the Douglas Creek watershed. There are no springs on record in the upper tributaries of Cottonwood Creek or Hell's Hole. In addition, the specific conductance's (SC) of twelve of these sources have values greater than 5,000 micromhos indicating high levels of salinity. Levels this high make them less desirable as water sources.

Table 3-7: Springs

Spring Name	Quarter	Sec #	Twp	Range	Water Right	SC	pH	Discharge in gpm	Watershed
BLM 176-03	SENE	20	3S	102W	-----	6321	7.6	0.2	Evacuation
Wild Rose/ BLM 176-04	NWSE	20	3S	102W	-----	8280	7.9	2	Evacuation
Big Cedar/ BLM 176-05	SENE	29	3S	102W	-----	10315	7.7	30	Evacuation
BLM 176-06	NESE	29	3S	102W	85CW391	12574	8	7.5	Evacuation
BLM 176-20	NWSE	29	3S	102W	85CW391	2838	8.6	6.7	Evacuation
Wild Horse/ BLM 177-08	NWSE	11	3S	103W	-----	1317	8.2	0.8	Evacuation
Shale/ BLM 180-01	SWNW	12	4S	103W	-----	4629	6.5	0.3	Evacuation
BLM 180-03	SWNE	16	4S	102W	-----	12602	8	0.5	Evacuation
BLM 180-20	NESE	18	4S	102W	-----	8172	8.1	1.6	Evacuation
BLM 180-24	SENE	18	4S	102W	-----	1414	10.9	1.1	Evacuation
BLM 181-01	SWNE	32	3S	102W	-----	13930	8.2	0.1	Evacuation
BLM 181-34	SWNW	32	3S	102W	-----	13298	7.5	0.4	Evacuation
BLM 155-01	NWSW	10	1S	102W	85CW439	9790	8	0.79	W. Douglas
BLM 181-21	NENE	8	4S	102W	-----	8588	8.2	0.5	W. Douglas
BLM 181-31	NWNE	17	4S	102W	85CW355	5278	8.3	0.1	W. Douglas
Oak / BLM 181-32	NWSE	17	4S	102W	-----	5170	8.8	2.9	W. Douglas

3.6 Riparian Systems:

The descriptions of riparian systems are organized by the same four watersheds as the above descriptions of water quality.

Douglas Creek Watershed: Within the Douglas Creek watershed, riparian systems occur on Main Douglas, West Douglas, and West Creeks. These riparian systems are located within relatively wide valley bottoms (200-600 yards). The upper terraces of these valleys are composed of sagebrush, greasewood, western wheatgrass and annual grasses and forbs. The riparian habitat is located within incised channels of these valley bottoms. Plant composition within the riparian zone is coyote willow, tamarisk, cattails, carex and juncus. The stream channels are confined by incised channel banks, have low stream gradients, meandering channel and have channel materials composed of silt clay bed materials. These streams are in proper functioning condition with an upward trend. These streams are dependant on coyote willow and carex/juncus plant communities for streambank stability. All of these streams have beaver which subsist even when the channel and their ponds are dry. Suitable habitat for willow growth is limited to the area between the incised channel banks, which limits forage and dam building materials for the

beaver. Once willow stocks are depleted, beaver abandon these stretches of the stream to inhabit suitable habitat either upstream or downstream.

Under the current livestock management program, the majority of livestock use along West Douglas Creek is during the migrations between the winter and summer ranges. Grazing use of the riparian area is physically limited by the incised channels and beaver ponds which act as enclosures. Where livestock do have access to the stream channel, livestock use is localized and heavy. No adverse impacts to riparian habitats have been identified as a result of grazing use by wild horses. Horse use may be limited as a result of disturbance from vehicles using state highway 139, which runs along Main and West Douglas Creeks.

Livestock use on West Creek is similar to that described for West Douglas Creek.

Livestock use on Main Stem Douglas Creek is primarily during the winter and spring with a four year livestock management program requiring removal of livestock by May 15, May 31, April 1 and May 1, providing for total deferment of one year and partial deferment two of the four years. A group of wild horses has been using Main Douglas Creek in the vicinity of Vandamore Draw. The riparian area continues to develop and improve under these current uses and management.

Texas Creek Watershed: Texas Creek has no riparian vegetation nor is there any known opportunity for the development of a riparian system in this channel.

Cottonwood Creek Watershed: Cottonwood Creek has no riparian vegetation nor is there any known opportunity for the development of a riparian system in this channel. Cottonwood Creek is named for several cottonwoods growing within two miles of the confluence of the White River. The cottonwood habitat is the result of side hill springs which do not contribute to Cottonwood Creek.

Hell's Hole Watershed: Only the upper portion of this watershed is contained in the herd area, there is no perennial water, or any opportunity for development of a riparian system.

Larger, more persistent springs receive concentrated use by all large grazing animals on a seasonal or year-round basis. Heavy and persistent use has suppressed riparian development on some sites, degrading the downstream potential for riparian expression and suppressing vegetation-derived stability to the spring site and downstream channels and banks.

3.7 Soils:

Table 3-8 below depicts the soils/soil associations by ecological sites and the acres of each type within the Plan Amendment area. A detailed description of each of the soils can be found in the Order III, Soil Survey of Rio Blanco County Area Colorado, available at the BLM White River Field Office.

Table 3-8: Soil Mapping Units found within the Herd Area with Soil Characteristics

Soil Unit Name	Slope	Ecological site	Salinity	Run Off Potential	Erosion Potential	Depth to Bedrock	Acres in HA
Rentsac-Moyerson-Rock Outcrop complex	5-65%	PJ Woodlands/ Clayey Slopes	<2	Medium	Moderate to very high	10-20	82414
Moyerson stony clay loam	15-65%	Clayey Slopes	2-4	Rapid	Very high	10-20	8438
Torriorthents-Rock Outcrop complex	15-90%	Stoney Foothills	--	Rapid	Very high	10-20	7910
Blazon, moist-Rentsac Complex	6-65%	Pinyon-Juniper woodland	2-4	Rapid	Moderate to very high	10-20	6732
Havre loam	0-4%	Foothill Swale	<4	Medium	Slight	>60	2307
Yamac Loam	2-15%	Rolling Loam	<2	Medium	Slight to	>60	1861

Soil Unit Name	Slope	Ecological site	Salinity	Run Off Potential	Erosion Potential	Depth to Bedrock	Acres in HA
					moderate		
Piceance fine sandy loam	5-15%	Rolling Loam	<2	Medium	Moderate to high	20-40	1853
Patent loam	3-8%	Rolling Loam	<2	Medium	Moderate	>60	1839
Rabbitex-Work loams	10-25%	PJ woodland /Deep Loam	<2	Medium	Moderate to high	40-60	1822
Rabbitex flaggy loam	10-65%	Pinyon-Juniper woodland	<2	Medium	Moderate to very high	40-60	1774
Rentsac channery loam	5-50%	Pinyon-Juniper woodlands	<2	Rapid	Moderate to very high	10-20	1344
Tisworth fine sandy loam	0-5%	Alkaline Slopes	>4	Rapid	Moderate	>60	1215
Torrifluvents gullied	0-5%	None	--	Rapid	Very high	>60	1211
Razorba channery sandy loam	30-75%	Spruce-Fir woodland	<2	Medium	Very high	>60	1197
Glendive fine sandy loam	2-4%	Foothills Swale	2-4	Slow	Slight	>60	990
Rentsac-Piceance complex	2-30%	PJ woodland/ Rolling Loam	<2	Medium	Moderate to high	10-20	778
Blakabin-Rhone-Waybe complex	5-50%	Brushy Loam/ Brushy Loam/ Dry Exposure	<2	Medium to rapid	Moderate to very high	>60	587
Badland	50-100%	None	--	Very rapid	Very high	0-10	512
Turley fine sandy loam	3-8%	Alkaline Slopes	2-4	Medium	Slight to moderate	>60	484
Turley fine sandy loam	0-3%	Alkaline Slopes	2-4	Medium	Slight	>60	463
Redcreek-Rentsac complex	5-30%	PJ woodlands /PJ woodlands	<2	Very high	Moderate to high	10-20	445
Patent loam	0-3%	Rolling Loam	<2	Medium	Slight	>60	292
Rock Outcrop	50-100%	None	--	Very high	Slight	0	194
Veatch channery loam	12-50%	Loamy Slopes	<2	Medium	Moderate to very high	20-40	160
Chipeta-Walknolls Complex	5-15%	Clayey Saltdesert/Saltd esert breaks	8-16	Rapid	High	10-20	152
Parachute Loam	25-75%	Brushy Loam	<2	Medium	Very high	20-40	152
Rhone loam	30-75%	Brushy Loam	<2	Medium	Very high	40-60	144
Irigul channery loam	5-50%	Loamy Slopes	<2	Medium to rapid	Very high	10-20	128
Castner channery loam	5-50%	Pinyon-Juniper woodlands	<2	Medium to rapid	Moderate to very high	10-20	124
Absher loam	0-3%	Alkaline Slopes	4-8	Medium	Moderate to high	>60	118
Glenton sandy loam	1-6%	Alkaline Slopes	<4	Slow	Moderate	>60	116
Uffens loam	0-5%	Alkaline Slopes	4-8	Slow	Moderate	>60	78
Patent loam	8-15%	Rolling Loam	<2	Medium	High	>60	60
Irigul-Parachute complex	12-45%5-30%	Loamy Slopes/Mountain Loam	<2	Rapid	Slight to high	10-20	43
Bulkley channery silty clay loam	5-30%	Pinyon-Juniper woodlands	<2	Rapid	High	40-60	42
Barcus channery loamy sand	2-8%	Foothills Swale	<2	Slow	Moderate	>60	40

Soil Unit Name	Slope	Ecological site	Salinity	Run Off Potential	Erosion Potential	Depth to Bedrock	Acres in HA
Absher loam	3-8%	Alkaline Slopes	4-8	Rapid	Moderate to very high	>60	31
Work Loam	3-8%	Deep Loam	<2	Medium	Moderate	>60	27
Nagitsy-Irigul channery loams	5-50%	Brushy Loam/Loamy Slopes	<2	Medium	Slight to very high	20-40	24
Abor Clay Loam	5-30%	Clayey Foothills	<4	Rapid	High	20-40	20
Forelle loam	3-8%	Rolling Loam	<2	Medium	Moderate	>60	12
Kobar silty clay loam	3-8%	Deep Clay Loam	<2	Medium to rapid	Moderate	>60	7
Waybe-Vandamore Variant-RO complex	5-30%	Dry Exposure	<4	Rapid	Moderate to high	10-20	2
Total Acres							128,145

A total of 52,570 acres are considered to be fragile or extremely saline on slopes exceeding 35 percent. Of these, 51,782 acres are mapped as being fragile. Map B-7 in Appendix B shows where these fragile soils are within the herd area. Excessive slope steepness increases the erosion potential of soils because it increases the rate at which water will flow overland and transport soil particles. The USDA Soil Conservation Service publications state that slopes of 20 to 35 percent contribute to a severe erosion hazard.

Approximately 788 acres within the herd area are mapped as being highly saline as well as fragile. In addition, a substantial acreage of soils range from slightly to strongly saline at the surface or in a near surface sub horizon. These types of soils generally support a sparse vegetation cover of low salt tolerant desert shrubs, grasses, and cryptogamic lichens. They formed in alluvium, colluvium, residuum, and reworked eolian deposits derived dominantly from shale and sandstone. Because they lack continual moisture, these soils are dry, causing salts to precipitate at the surface as soil moisture evaporates. Runoff from these areas transports salt in solution and sediment contains undissolved salts that go rapidly into solution when they reach a major waterway

In addition, within the planning area, approximately 108,767 acres or 85% of the total acres consist of soils less than 20 inches deep. The majority of these soil surfaces generally have a high portion of fine materials with little organic matter. Characteristic of these soils is slow permeability, low available water capacity, steep slopes, and shallow depth to rock making runoff rapid.

Soils susceptible to wind erosion cover approximately 10,300 acres. These soils have very fine sands and sandy loam and lack clay and organic matter. Permeability is usually rapid, available water capacity is moderate.

The soil types used to determine land health standard are listed in Table 3-9 below with corresponding acreage of each soil type. These soils are in the drainage bottoms where the horses tend to congregate. Map B-3 in Appendix B shows the location of these soils within the herd area.

Table 3-9: Soils not meeting the Land Health Standard

Soil #	Soil Name	Ecological site	Slope	Acres in HA
3	Absher loam	Alkaline Slopes	0-3%	118
6	Barcus channery loamy sand	Foothills Swale	2-8%	40
36	Glendive fine sandy loam	Foothills Swale	2-4%	990

Soil #	Soil Name	Ecological site	Slope	Acres in HA
37	Glenton sandy loam	Alkaline Slopes	1-6%	116
41	Havre loam	Foothill Swale	0-4%	2307
61	Patent loam	Rolling Loam	3-8%	1839
89	Tisworth fine sandy loam	Alkaline Slopes	0-5%	1212
90	Torrifluvents gullied	Alkaline Slopes	0-5%	1210
93	Turley fine sandy loam	Alkaline Slopes	0-3%	463
94	Turley fine sandy loam	Alkaline Slopes	3-8%	483
Total Acres				8,778

3.8 Wilderness:

Oil Spring Mountain Wilderness Study Area (WSA), which straddles the southern boundary of the West Douglas Herd Area, is an undeveloped island surrounded by scattered oil and gas wells, roads and well pads. There are no other areas remaining in a natural state with similar landforms and ecosystems within the oil and gas development belt in this region of Western Colorado. Management of WSAs is directed by the BLM's Interim Management Policy (IMP) which mandates management so as not to impair their suitability for preservation as wilderness. This language is derived from the Federal Land Policy and Management Act (FLPMA), and is referred to as the "non-impairment" mandate. The *Wilderness Study Report, Record of Decision, Craig District Study Areas* (BLM 1991) does not recommend that Oil Spring Mountain WSA become a designated wilderness because of pre-FLPMA oil and gas leases; however, the WSA will continue to be managed per the IMP until such time as Congress acts to either release the area to other multiple uses or designate it as wilderness. The values identified below are typically used to describe the wilderness character of a WSA.

NATURALNESS: The Oil Spring Mountain WSA is predominantly natural in character with negligible human imprints. Only minor imprints of humans are scattered around the periphery of the WSA. Existing range improvements include five improved springs and seven stock ponds which are screened by vegetation and topography. Eleven abandoned or plugged wells occur within the WSA and two shut-in gas wells in the western portion of the WSA, all of which are well screened by vegetation and topography and remain substantially unnoticeable within the area.

SOLITUDE: Topographic and vegetative screening within the WSA provides outstanding opportunities for visitors to experience solitude. The large blocked configuration of the WSA provides ample room for visitors to disperse and become isolated and segregated from others using the area. The relatively low use within the WSA also contributes to outstanding opportunities for solitude.

PRIMITIVE AND UNCONFINED RECREATION: The WSA contains outstanding opportunities for primitive and unconfined recreation. Big game hunting is the primary activity while others include hiking, backpacking, horseback riding and wildlife viewing. The rugged dissected topography and varying landforms are appealing for photography. The very diverse botanic communities within the WSA provide excellent opportunities for nature study. The WSA is accessible via dirt roads which nearly surround the WSA. The large blocked configuration allows for unconfined movement within the WSA. Low use of this WSA contributes to excellent primitive recreation experiences.

SPECIAL FEATURES/SUPPLEMENTAL VALUES: A portion of the WSA is identified as critical habitat (summer range) for mule deer. The diverse vegetation types also provide a variety of wildlife habitat and biological diversity. The WSA is an undeveloped island surrounded by oil and gas development. The area provides undisturbed habitat for flora and fauna. A small natural arch and cave in the southwest portion of the WSA adds interest. Archeological sites also occur within the WSA. It is of note that wild horses were identified as a special feature in the intensive

wilderness inventory conducted in 1979 and within the *Intensive Wilderness Inventory Analysis of Public Comment and Final Wilderness Study Areas (BLM 1980)*.

3.9 Geology and Minerals:

OIL AND GAS

The herd area is located along the Douglas Creek Arch, which supports numerous oil and gas fields. Production is mainly natural gas. Producing formations, in descending order, are the Cretaceous Mancos, Dakota and Buckhorn, Jurassic Morrison, and the Pennsylvanian Weber Sandstone.

Approximately 93% of the herd area (118,786 acres) is presently leased for the development of the oil and gas resources. There are eleven unitized areas which are completely or partially located within the herd area, comprising 38,396 acres (approximately 30% of the herd area). Unitized areas are made up of several individual leases grouped together and operated as a single lease in order to provide for more efficient operations and recovery of oil and gas reserves. Individual leases date from 1925 to 2005. Over 95% of these were issued prior to issuance of the Record of Decision for the White River RMP, and approximately 84% are considered to be held by production. The two oldest units, Douglas Creek and Dragon Trail, were established in 1938 and 1959, respectively.

Available records from "Dwight's" (HIS Energy) indicate that, as of March 3, 2004, approximately 850 wells have been drilled in the herd area. Of these, approximately 590 are producing, shut-in, or temporarily abandoned. Most wells are concentrated in an east-west band across the middle one-third of the herd area. Map 3-10 shows the distribution of wells in the Herd Area (spud dates are the year drilling is started).

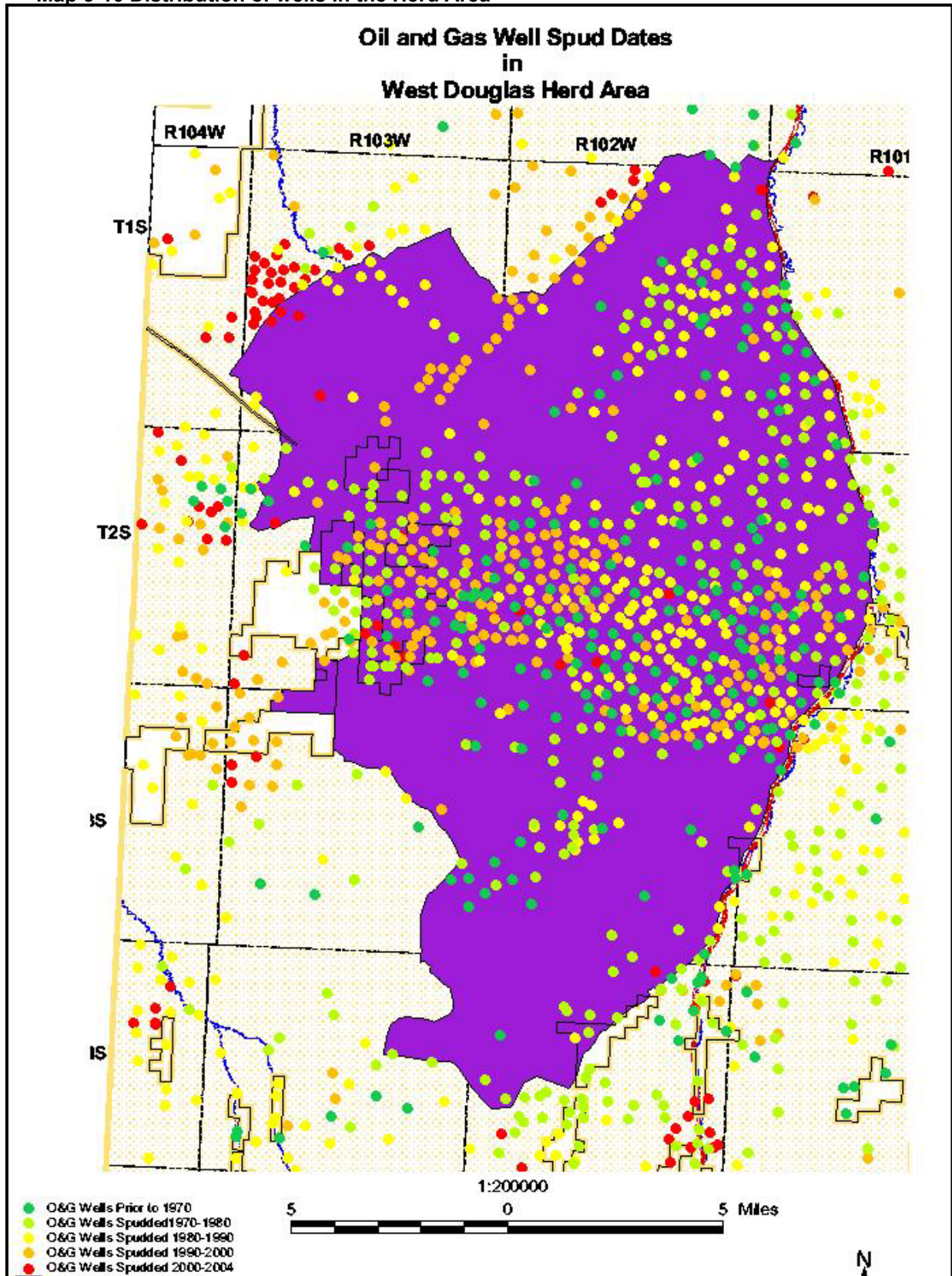
Existing well densities, both planned and actual, vary throughout the area. Most of the unitized areas, representing about 30% of the herd area, are planned for eight wells per section. Actual development has been close to this number, as well. Approximately 15% of the area is planned at 4 wells per section by State COGCC order, while the remaining 55% of the herd area has no planned/ordered spacing. In this last case, 16 wells per section could be developed. Ultimately, the density is based on several factors, such as estimated reserves, identified geologic structures and actual production of surrounding wells, and is less than that planned or established by order.

A Reasonably Foreseeable Development (RFD) scenario was developed for the 1997 Resource Management Plan. This development plan estimated 737 wells would be drilled in the Douglas Creek Arch area (roughly the area south of Rangely from Cathedral Bluffs to the Utah border) over the 20-year life of the White River Resource Plan. This would equate to about 37 wells per year. Since 1997 a total of approximately 201 wells or about 26 per year have actually been drilled. Of these 201 wells, 72 (roughly 9 wells per year) have been drilled in the herd area (based on data in AFMSS). If this trend continues, approximately 110 wells would be drilled in the Herd Area over the remaining life of the Resource Management Plan. In the longer term, the Reasonably Foreseeable Development scenario states that 80 acre spacing of wells would be anticipated, although not within the life of the plan. Since the Herd Area covers 123,387 acres, this could ultimately lead to a potential for up to 1,542 wells in the Herd Area. With approximately 590 wells currently in the area, up to 952 additional wells could potentially be drilled in the longer term.

The Reasonably Foreseeable Development (RFD) scenario assumed a total of 10 acres of disturbance per well, to include the pad, road, and pipeline. Using this figure, we would anticipate a total of 1,100 acres of oil and gas development-related disturbance over the remaining life of the Resource Management Plan, or a total of 9,520 acres over the longer term.

Actual disturbance since completion of the plan has been closer to 5 acres per well. At this lower level, we would anticipate a total of 550 acres of disturbance through the life of the plan, or 4760 acres in the longer term.

Map 3-10 Distribution of wells in the Herd Area



COAL

The Upper Mesaverde Formation contains the principle coal seams in the region, with some coal seams in the lower Mesaverde. Interest in the coal from in and around the herd area is low because of more accessible coal available elsewhere in the region.

SALEABLE MINERALS

Baked shale (scoria), formed by the in-situ burning of coal seams, is found in this area within the Mesaverde formation. This material is used for road maintenance and construction.

LOCATABLE MINERALS

No mining claims are recorded in the herd area.

3.10 Land Status and Realty Authorizations:

Approximately 96% of the herd area is public land in both surface and mineral estate. Among other uses, these lands have supported oil and gas production and infrastructure, for well over fifty years. Pipelines, compressor stations, gas plants, and meter stations authorized under Section 28 of the Mineral Leasing Act of 1920, as amended, have been a major part of this infrastructure.

Two formally designated right-of-way corridors cross the herd area. The Dragon Trail-Atchee Corridor runs Southwest-Northeast across the west side of the area, generally along County Road 23. The county road and segments of one or more natural gas gathering line are located within this corridor. The Park Canyon-Magnolia Corridor runs East-West across the south-central part of the area. Major segments of two interstate natural gas transmission lines are located within this corridor. These corridors, which were formally designated in the Record of Decision for the White River RMP, are each one mile wide, and are designated for the siting of buried linear facilities (e.g. natural gas transmission pipelines). Map B-5 in Appendix B shows the location of these corridors in relationship to the herd area.

3.11 Wildlife:

Wildlife inhabiting the West Douglas herd area, and upon which management emphasis is placed, includes big game (mule deer and elk), blue grouse, and nongame species (e.g. raptors.)

Big Game: Horse distribution in this Resource Area is coincident with the seasonal ranges of both mule deer and elk.

The current herd area encompasses about 30% of the general winter range and 3% of the summer range (critical habitat) available to deer, and about 10% the summer range (critical habitat), 8% of the severe winter range, and about 39% of the remaining winter range extent available to elk in Game Management Unit (GMU) 21. Critical habitat is a designation conveyed to seasonal habitats that, within a given big game herd area (Data Analysis Unit - DAU), are most limited in supply or are of inordinate value; the loss or deterioration of which would adversely affect the species.

Game Management Unit 21 (within which the herd area lies) is managed by Colorado Division of Wildlife (CDOW) as a trophy unit for mule deer. Population management is geared to improving herd structure and numbers. Approximately 60% of the DAU's deer population winters at lower elevations in the Douglas, Missouri, and Evacuation Creek drainages in mature pinyon and juniper woodlands interspersed with sagebrush and/or deciduous browse shrublands. Suitable summer habitat in the herd area is confined to higher elevation Douglas-fir and mixed shrub associations on Oil Spring, Texas, and Rabbit Mountains. Local CDOW staff has noted declines in summer deer use of, and fall movements through, the Oil Spring/Texas Mountain complex over the last decade. This observation is consistent with demonstrated behavioral dominance and competitive displacement of deer by elk and/or cattle (Johnson 2000, Stewart 2001, Gill 1999)

and it is likely that in identified key use areas horses exert similar effect on deer, particularly during the spring and summer months (Berger 1985, Coates 1994).

In a Report to the Colorado Legislature, a number of Colorado Division of Wildlife researchers addressed the decline of mule deer populations in the western states with particular emphasis on Colorado (Gill 1999). They concluded that deer population declines were the result of a complex interaction of 5 primary factors: decreasing extent and quality of critical habitats, competition with elk and other grazing livestock, disease, predation, and hunting. They presented evidence suggesting that declining trends are linked primarily to insufficient fawn recruitment associated with low birth weights and high mortality soon after birth (e.g., inadequate nutritional status).

Deer population objectives remain consistent with those authorized in the RMP in 1997 for the Douglas planning unit (i.e., about 9,385 on BLM surface). CDOW estimates that wintering deer populations are about 50% below objective levels in GMU 21, which translates to a desired increase of about 4700 deer on Public Lands within the Game Management Unit. At present, it is estimated that about 100 deer summer in the Oil Spring/Texas Mountain area and an average 1600 deer winter on ranges within the herd area.

Elk populations in GMU 21 are considerably higher than Colorado Division of Wildlife's (CDOW) long-term population objective (2-3 times higher). CDOW is currently reevaluating their plans for managing elk in Data Analysis Unit (DAU) E-10, which includes the Piceance (Game Management Unit (GMU) 22) and Douglas (GMU 21) basins. However, it is likely that CDOW will continue to manage for reduced numbers of elk in an effort to reach the established population objective.

Population density varies by season with fewer elk occupying the herd area during the core winter months (about 100 from late November through February) and larger numbers supported spring and fall (about 160-200 animals). Critical summer range habitat for elk is similar in distribution to that of mule deer. Oil Spring and Texas Mountains provide suitable summer habitat for elk, but relatively few animals (about 50) summer in the herd area. Similar to the situation with deer, there is reasonable likelihood that summering elk, particularly cows and calves, avoid using those areas frequented by these larger exotic ungulates (Stewart 2001, Berger 1985) in the Texas/Oil Spring Mountain key use area.

In reviewing and mediating grazing management concerns in the Twin Buttes allotment (report dated March 1998), the Colorado Department of Agriculture Section 8 team found that numbers of deer and elk at that time were having little apparent effect on the allotment's vegetation resources or the livestock operation. However, the team cautioned that if Game Management Unit 21's elk populations continued to expand concurrent with increased deer abundance, excessive forage use would be of concern. Deer populations have remained relatively constant in GMU 21 since 1998 ($\pm 8\%$), whereas elk have increased in annual increments approaching 3%. Overall, increased big game use attributable to elk (about 350 AUMs) has been compensated for by the current paucity of deer. Within the herd area, it is estimated that deer and elk consume an equivalent of 800 AUMs during the spring and summer and about 1800 AUMs during the dormant season—some 1650 AUMs below calculated forage use at objective levels. Achieving deer population objectives would add nearly 2000 AUMs of use to the herd area. CDOW is attempting to install innovative and aggressive methods to reduce elk populations in GMU 21 with the 2004 season.

Spring and fall elk numbers have increased such that localized forage/riparian conflicts with livestock have begun to occur (e.g., early spring use of bottoms in close proximity to steep conifer slopes, and on upland spring sites). Sources of free water are limited within the herd area. Larger, more persistent springs receive concentrated use by all large grazing animals on a seasonal or year-round basis.

The mid to late winter/early spring period (December to early May) presents the greatest nutritional challenge for deer, in part, because the quantity and accessibility of forage is constrained by snow accumulations and the nutritional properties of available forage is low. Adequate forage volume and quality are essential for avoiding excessive and irreversible weight loss that results in excessive winter mortality and inadequate fetal development. During most winters, snow cover limits the effective foraging area available to deer. Under heavy snow conditions and under normal circumstances by February, deer are often relegated to south facing slopes on late winter ranges which offer moderated daytime temperatures and snow depth. Although forage volume is small, south-facing slopes promote early herbaceous emergence and minimal constraint in accessing forage.

In March, April, and May deer seek and make increasing use of emerging herbaceous forage (up to 40% grasses) particularly in bottomland and valley situations. Early spring (April-May) forage supplies and availability are essential for increasing the physical condition of deer recuperating from winter deficiencies in preparation for spring movements, accelerated fetal growth and development, and subsequent lactation. Similarly, summer diets (June-August) involve 60-90% herbaceous forage, primarily nutrient-rich forbs.

As forbs progress toward dormancy with the onset of warmer and drier summer conditions, their nutritional value declines, and management that prolongs the availability of succulent, high quality forage is of great advantage (e.g., riparian and mesic channels/valleys). As sites producing fresh herbaceous material decline through late fall, browse begins to assume a dominant and nutritionally superior dietary fraction. Throughout this period (August through December), deer must assimilate nutrients and energy in excess of need, thereby allowing for the production and storage of fat and protein reserves in preparation for winter. Nutritional assimilation is strongly enhanced by a diverse diet, regardless of season.

Although elk in GMU 21 are thought to rely principally on herbaceous forage throughout the year, seasonal patterns of forage use and nutritional need are similar to deer.

Blue grouse: The herd area encompasses a peninsula of higher elevation habitats extending north from the Douglas-Baxter Pass divide that support year-long blue grouse occupation (i.e., West Creek pasture and higher elevations of the East and West Texas Creek pastures). This range comprises about 14% of the potential blue grouse habitat available in Game Management Unit (GMU) 21. Grouse winter habitat and year-round distribution centers on the 1200 acres of mixed spruce and fir forest on Texas and Oil Spring Mountains. Habitats that support nesting, brood-rearing, and general summer and fall distribution are confined to about 2380 acres of surrounding mixed shrub and higher elevation (above 7200') sagebrush habitats (about 7% of those available in GMU 21).

After the first snows, blue grouse distribution is strongly associated with mature arboreal cover in spruce, fir, and pine; and diets consist primarily of conifer needles. Optimal nest and brood habitat consists of open mixed shrub stands with a conformation that provides effective horizontal and vertical concealment. Well developed herbaceous understory vegetation complements horizontal nest concealment and improves microclimatic (e.g. temperature, humidity, wind) conditions at the nest site. Both nest success and the survival of young broods is enhanced by well developed herbaceous understories beneath and among shrub canopies. Upland parks and adjacent drainage systems and spring sites produce persistent broadleaf herbage and insects favored and nutritionally required by hens and broods from April through August.

Collective use of herbaceous growth by livestock, horses, and big game on grouse nest and brood ranges affects the availability and utility of herbaceous plants used directly as forage, or as substrate for invertebrate prey, and the efficacy of herbaceous cover (i.e. grasses and forbs) as cover and concealment during the nesting and early-brood rearing period. Both early herbaceous growth (April-June) and residual stubble that persists from the previous growing season are thought to be important determinants in nest success and brood survival. Heavy grazing use

typically prompts retreat of broods to more moderately utilized ranges, if available (i.e., concentrating birds and reducing the extent of suitable habitat).

Overall, herbaceous ground cover in potential grouse nest and brood habitats range in the vicinity of Texas and Oil Spring Mountains is ineffective as supplemental cover in terms of residual height and horizontal ground cover. In those areas with persistent spring through fall grazing by elk and horses, little interstitial (i.e., between shrub crowns) ground cover remains on bench, ridgeline, and basin habitats through the summer brood period and into the following nesting season. In particular, with water developed for seasonal livestock use, the woodland chainings on the east side of Texas Mountain have assumed heavy and persistent growing and dormant season use by horses. Although growing season use by horses and elk likely plays an influential role in preventing improvements in herbaceous expression, BLM believes the local condition may be related principally to advancing age and decadence within these shrub stands.

Raptors and Non-game Wildlife: Raptor nesting activities are dispersed throughout the project area. Nesting records are heavily skewed toward the more conspicuous cliff-nesting species. Golden eagles and red-tailed hawks nest predominantly on cliff faces found throughout this region. Systematic or extensive inventory for the less obvious, but probably more common woodland nesting species, including Cooper's and sharp-shinned hawks, northern pygmy, saw-whet, and long-eared owls, is lacking and few nests have been recorded relative to the extent of available habitat. Relatively small and dispersed forest tracts of spruce-fir and aspen can support inordinately high number of breeding woodland raptors. Nesting records for potentially affected hawks, eagles, and owls indicate that nest attempts (initiated as early as March) are largely (85%) complete and young fledged by early August.

The maintenance of raptor populations is largely dependent on its small mammal and bird prey base. Nongame animal populations are relied upon to provide sufficiently abundant and diverse prey to satisfy the requirements of these predators. Under any given circumstance, nongame populations are typically more diverse and abundant when the habitat's herbaceous component, as substrate for cover or forage, is better expressed in terms of height, ground cover, and compositional and structural diversity. Conversely, progressive declines in the density and height of herbaceous ground cover normally detract from the abundance and richness of nongame bird and small mammal communities.

The non-game bird community throughout the herd area's uplands is considered representative and complete with no obvious deficiencies in composition. Over 200 species of nongame birds have been recorded in predominant habitats widely represented within the West Douglas herd area (e.g., pinyon-juniper, mountain shrub, sagebrush). Species associated with riparian/wetland and spruce/fir forest communities are confined to limited acreage in mainstem and West Douglas Creek (forming the eastern boundary of the herd area) and the tops of Texas and Oil Spring Mountains, respectively.

Small mammal populations are poorly documented; however, the 20 or so species that are likely to occur in this area are widely distributed throughout the Great Basin or Rocky Mountain regions. Even though several species have relatively specialized habitat affiliation (i.e., shrubland with well developed understories), all species display broad ecological tolerance. No narrowly distributed or highly specialized species or subspecific populations are known to occur in the herd area.

Aquatic Wildlife: Although an important Colorado River cutthroat trout fishery exists in the adjacent East Douglas watershed, there are no perennial systems capable of sustaining a cutthroat fishery in the herd area. Perennial reaches of the West Douglas and mainstem Douglas channels are known only to support small numbers of speckled dace, an abundant and widely distributed nongame species. Beaver have intermittently colonized Douglas Creek, as well as a small portion of West Douglas Creek near Sand Draw. These beaver ponds and their lengthy backwaters are exploited by small, but well distributed breeding populations of mallard, green-winged teal, and spotted sandpiper.

3.12 Migratory Birds:

A large array of migratory birds fulfills nesting functions throughout the herd area's woodland and shrubland habitats during the months of May, June, and July. Species associated with these shrubland and woodland communities are typical and widely represented in the Resource Area and region. Those bird populations associated with this Resource Area's shrublands and pinyon-juniper identified as having higher conservation interest (i.e., Rocky Mountain Bird Observatory, Partners in Flight program) are listed in Table 3-1 below. These birds are typically well distributed in extensive suitable habitats. Species classified with the forest types (aspen/fir) are best associated with mesic aspen stands in this Resource Area—a habitat type that does not occur within the herd area. There is no reasonable expectation for these birds to be well represented in the herd area's small and disjunct fir stands.

Table 3-10: Birds with High Conservation Priority by Habitat Association in Herd Area:

	Habitat Association			
	Sagebrush	Pinyon-juniper	Mountain shrub	Aspen/fir
Birds	Brewer's sparrow, green-tailed towhee	gray flycatcher, gray vireo, pinyon jay, juniper titmouse, black-throated gray warbler, violet-green swallow	blue grouse, common poorwill, Virginia's warbler	broad-tailed hummingbird, red-naped sapsucker, purple martin, Cordilleran flycatcher, MacGillivray's warbler

Those portions of Douglas and West Douglas Creeks within the herd area boundary also support a strong contingent of riparian-affiliated (willow and tamarisk) neo-tropical migratory birds, including: yellow warbler, yellow-breasted chat, blue grosbeak, and lazuli bunting. Although uncommon and sporadic breeding species at this time, willow flycatcher and common yellowthroat are expected to increase in abundance and distribution as these channels continue to develop more stable and extensive willow and sedge dominated components.

3.13 Threatened and Endangered Animals:

No animals listed, proposed, or candidate under the Endangered Species Act are known to make appreciable use of the herd area.

Colorado River pike-minnow

The endangered pike-minnow occupies the lower White River below Taylor Draw dam. The White River and its 100-year floodplain below Rio Blanco Lake have been designated as critical habitat for the fish. The West Douglas herd area in its various configurations is located in the Douglas, Cottonwood, and Evacuation Creek watersheds, all of which drain to the White River below Taylor Draw dam. The river is separated varying distances from affected portions of the watershed by ephemeral or intermittent drainage systems, as follows:

Douglas Creek watershed (65% of herd area): 6 miles
Cottonwood Creek watershed (15% of herd area): 7 miles
Evacuation Creek watershed (20% of herd area): 22 miles

Management of the herd area within the constraints of the Bureau's Standards for Rangeland Health would pose no reasonable threat of direct or indirect influence on water quality or channel/floodplain condition or function in those portions of the White River regarded as critical habitat.

Bald eagle

The White River corridor is the hub for seasonal bald eagle use of the lower White River Valley. Particularly during the later fall and winter months, up to several dozen bald eagles make regular

foraging use of open upland communities south of the river, but these forays in search of, primarily, big game and livestock carrion and small game (e.g., rabbit and hare) are dispersed and opportunistic. Concentrated diurnal use and nocturnal roosting functions during the winter and summer use attributable to a nest site near the Utah border are associated with the river corridor's cottonwood stands, a minimum of five miles north of the herd area boundary.

Bald eagle use associated with the lower White River valley, especially during the fall and winter use period, is loosely linked to populations of big game and small game as a source of nutrition, but the availability of winter forage is largely independent of management associated with the herd area.

Mexican spotted owl

BLM is aware of only 2 records of Mexican spotted owl in the vicinity of this Resource Area: one unpaired male in Dinosaur National Monument, CO in the summer of 1996 and 1997, and a single bird in northeast Utah (upper Book Cliffs; fall 1958). Suitable habitat consists of arid canyonlands, or mature to old-growth mixed conifer stands, particularly in proximity to deep rocky canyons. In the course of preparing state-wide Biological Assessments for BLM's land use plans, contractors are presently evaluating the suitability of Mexican spotted owl habitat within this Resource Area. Initial indications are that potential suitable habitat is narrowly confined to steep, north-facing canyons supporting mixed conifer forests along the White-Colorado River divide. About a dozen conifer stands high in the headwaters of East Douglas Creek appear to satisfy accepted parameters of suitable habitat. These habitat parcels are located a minimum of two miles south of the current herd area boundary. Management of horses within the West Douglas herd area has no direct tie to the suitability or utility of potential Mexican spotted owl habitat in this Resource Area.

Sensitive Species

A number of animals are classified as sensitive by the BLM. These species are thought to be especially susceptible to population-level influences. It is the policy of BLM to identify these species on a state-by-state basis and ensure that BLM actions do not contribute to their becoming candidate for listing under the Endangered Species Act. Sensitive species that may occupy the herd area include the northern goshawk, greater sage grouse, Townsend's big-eared bat, and fringed and Yuma myotis. Similarly, the Colorado Natural Heritage Program has identified a number of nongame species that, by merit of population vulnerability, may warrant special management attention or concern. Species that inhabit areas within or near the West Douglas herd area include the gray vireo and sagebrush vole. These species will not be discussed separately in the Environmental Consequences Section (Section 4), but will be evaluated, where applicable, in conjunction with nongame terrestrial wildlife discussions.

Northern goshawk

The northern goshawk is normally associated with mature, higher elevation coniferous and aspen forests. Goshawks subsist primarily on a diet of medium-sized mammals and birds (e.g., grouse, ground and tree squirrel, rabbit).

The BLM has no record of goshawk nesting activity in the herd area, but based on experience in the adjacent Piceance Basin, the goshawk probably nests sparingly (e.g., 1-3 pair) in the southern half of the herd area in mature pinyon-juniper woodlands (above 6500') and spruce-fir forests. Although never common, an influx of migrant goshawk appears to elevate densities in this Resource Area during the winter months.

Outside of more heavily developed natural gas fields within the herd area (about 29% of area within current herd area extent), the extent and character of mature pinyon-juniper woodlands and other forest types within the herd area as goshawk nest habitat are believed static. Since much of the birds' prey base appears to fluctuate around long term means (e.g., blue grouse) or are relatively independent of prevailing land use activities (e.g., red squirrel), it is presumed that

local breeding and wintering populations of northern goshawk are also stable. However, because reductions in herbaceous ground cover, riparian damage, and deleterious shifts in native bunchgrass composition, attributable to collective ungulate use (past and present), suppress the abundance and availability of potential prey, it is likely that annual goshawk reproduction and winter survival are, to an indeterminate degree, responsive to grazing effects.

Greater sage grouse

Small numbers of sage grouse have been sporadically encountered in larger Wyoming big sagebrush parks on the north and northwest portions of the herd area, but there appears to be no consistent use or occupation of these habitats. These areas are not associated with any known strutting grounds and the habitat offers few attributes that would be expected to serve summer/nesting functions.

Townsend's big-eared bat, and fringed and Yuma myotis

Although the distribution and ecology of these bats are poorly understood, limited collections have documented their presence from western Colorado's semi-desert shrublands, woodlands, and canyonlands. These bats use caves, mines, and unoccupied buildings for night, nursery, and hibernation roosts. The big-eared bat and Yuma myotis, in particular, prefer to forage over riparian habitats.

Although these bats likely occur in small numbers in or near the herd area, habitat suitability may be sharply constrained by the paucity of suitable night, nursery, and hibernation sites. Although rock outcrops suitable for temporary daytime roosts are well distributed in the herd area, and relatively extensive riparian communities are available in West Douglas and mainstem Douglas Creeks, there are no underground mines or known caves, and unoccupied buildings are extremely limited in or within several miles of the herd area.

Gray vireo

The gray vireo is associated with this Resource Area's Utah juniper-black sagebrush ranges principally below 6000' in elevation. In higher elevation woodlands with more extensive canopies, and with the appearance of pinyon pine and the plumbeous vireo, gray vireo distribution appears to abruptly cease. Point-count surveys conducted by BLM from 1996-2000 in the core of occupied habitat indicate stable minimum breeding populations of about 13-15 pairs per section. The northern boundary of the West Douglas Herd Area lies on the southern periphery of occupied gray vireo habitat such that the herd area encompasses less than 10% of potential habitat within the Resource Area.

As insectivores, it is reasonable to assume that grazing practices that significantly reduce herbaceous ground cover during the nesting season, particularly after the hatch, would reduce vireo nest success and annual recruitment of young. This allotment's current grazing regimen in vireo habitat allows for complete growing season rest (cattle removed by April 1) or effective redevelopment of herbaceous ground cover (removed by May 1) three of every four years. In the remaining year, cattle are removed by about May 20, which would generally allow for modest redevelopment of herbaceous understories during brooding and post-fledge in June and July. It is unlikely that these cattle grazing practices would have any contributory effect on the depression of breeding density or nest success of gray vireo in the herd area, and should prompt long term improvements in ground cover density and height and increase the proportion of perennial grasses and forbs in community composition.

Although there is a history of horses occupying these lower elevation ranges, there has been no substantive use of these gray vireo habitats by horses since a BLM gather 15-20 years ago. There appears to be no tendency for horses to use these ranges at sustained herd area populations under 150 horses.

Sagebrush vole

The sagebrush vole occurs locally in sagebrush regions of the Great Basin and northern Great Plains. In Rio Blanco County, the sagebrush vole is associated with sagebrush and mixed shrub – perennial bunchgrass habitats from 6000-9000', which involves some 385,000 acres of BLM surface in the White River Resource Area. Oil shale baseline inventories in the mid-70s suggest that the vole is a widely distributed, but relatively uncommon component (1-2%) of this Resource Area's upland shrub small mammal community, occupying these habitats at minimum densities of about 1 per hectare. It is presumed that sagebrush voles are distributed throughout the herd area's 10,000 acres of upland sagebrush and mountain shrub communities and perhaps at lower densities in its 43,000 acres of saltbush and greasewood types.

Voies are active throughout the winter months beneath the snowpack; sagebrush leaves and cambium being the primary constituents of their winter diet. The voles reproduce during the spring and early summer months; their diverse summer diet consisting of flowers and leaves of virtually all green plants including grasses, forbs, and shrubs.

Populations throughout the West have been found to fluctuate dramatically in response to winter severity and growing season moisture. Although the vole has been found to be most abundant on shrublands with well-developed bunchgrass understories, it has also been found in more xeric sites, including sandy greasewood flats in Moffat County.

There is no information available with which to quantify grazing-related influences on the vole in this area. However, because the majority of the allotment meets BLM's Land Health Standards, it is believed that habitat utility and continuity remains largely intact. Stronger grazing-related effects are likely confined to those bottomland and basin situations in closer proximity to water where habitats have been subjected to heavy or prolonged ungulate use or those that have undergone deleterious shifts in community composition. In these situations, it is expected that vole density would be considerably lower than that supported by adjacent upland sites and certainly lower than potential. Reductions in residual herbaceous cover outside periods of snowpack likely reduce animal concealment and increase rates of mortality by predation, whereas adverse alterations in community composition likely reduces nutrition-based attributes such as survival of young and winter survival.

3.14 Threatened and Endangered Plants:

Limited inventories have been conducted for rare and endemic or rare and BLM sensitive species within the herd area. No Special Status plants have been documented so far. Many of these sensitive species in the region are endemic to the Green River geologic formation. This formation is limited to the Uintah Basin of Utah and the Piceance Basin/Roan Plateau of Colorado. Exposures of the Parachute Creek Member of the Green River Formation along Banta and Gilsonite Ridges (both outside the herd area) provide the habitat for two candidate species and three sensitive plant species. Two candidate species (*Penstemon grahamii* (Graham beardtongue) and *Penstemon albifluvis* (White River Penstemon)) are rare throughout their range of distribution in the White River resource area. The three sensitive species (*Oreocarya rollinsii* (Rollins cryptanth), *Eriogonum ephedroides* (*Ephedra buckwheat*), and *Parthenium ligulatum* (*Ligulate feverfew*)) are rare in Colorado and are more common in the Uintah Basin of Utah. The following species could have suitable habitat in the WSA portion of the Herd Area: *Penstemon grahamii* (Graham beardtongue) and *Penstemon albifluvis* (White River Penstemon). Both of these have been found only on Raven Ridge (north of the herd area) in Colorado, and extend along the White River towards eastern Utah where the formation occurs. Some suitable habitat for both the penstemon species occurs along the White River in Colorado just west of Raven Ridge, but no reports of either species has been documented there. *Oreocarya rollinsii* (Rollins cryptanth), *Eriogonum ephedroides* (*Ephedra buckwheat*), and *Parthenium ligulatum* (*Ligulate feverfew*) occur on exposures of the Parachute Creek Member and have been found along the Utah state line to the west of the herd area. Potential habitat also occurs in the Green River formation adjacent to the herd area on Texas Mountain, Oil Spring Mountain, Gilsonite Hills,

Rabbit Mountain, Park Mountain and perhaps in Lower Evacuation Creek. Oil Spring Mountain Wilderness Study Area maintains a No Surface Occupancy Stipulation on all sites where rare/protected species could exist and will require an inventory if any surface disturbing activities are proposed within the WSA.

3.15 Recreation:

The West Douglas Herd Area is within the White River Extensive Recreation Management Area (ERMA). BLM custodially manages the ERMA to provide for unstructured recreation activities such as hunting, dispersed camping, hiking, horseback riding, wildlife viewing and off-highway vehicle use. The herd area is also located within Game Management Unit (GMU) 21, a draw trophy mule deer area, which is managed by the Colorado Division of Wildlife. The fact that the GMU is a draw area for deer is an important distinction as hunters may spend a considerable amount of time and effort to be drawn in such an area. Therefore, it could be implied that this particular hunting experience could be one chance in a lifetime.

The recreation use of the herd area is low and tends to peak in use during October and November big game hunting seasons. Although no hard traffic or other scientific visitor counts exist, the general lack of old campsites and trash as well as anecdotal evidence from recreation field staff presence indicates that very little recreation use occurs within the herd area.

3.16 Visual Resources:

The West Douglas Herd Area contains all four Visual Resource Management (VRM) classes which have varying management objectives:

VRM CLASS I: Approximately 7,608 acres (6%) of the herd area are classified as VRM Class I. These areas are coincident with the Oil Springs WSA. The VRM class I management objective is preservation of the characteristic landscape. This class provides for ecological changes. However, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. VRM class I management objectives are being used to support Wilderness Study Area (WSA) management objectives. It is important to note that WSAs may not have exceptional scenic values as the intent of VRM is to preserve the current visual character to the WSA. Currently, the VRM class I objective is being met.

VRM CLASS II: Approximately 13,902 acres (11%) of the herd area are classified as VRM Class II. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the line, form, color and texture found in the predominant features of the characteristic landscape. VRM Class II areas are found adjacent to the Oil Springs WSA in the southeastern portion of the herd area and within the Cottonwood Creek drainage in the northwestern portion. This objective is currently being maintained.

VRM CLASS III: Approximately 17,082 acres (14%) of the herd area are characterized as VRM class III. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant features of the characteristic landscape. Class III visual objectives are being met at this time.

VRM CLASS IV: Approximately 85,297 acres (68%) of the herd area are designated as VRM Class IV. The objective of this class is to provide for management activities which require major modification of the existing landscape character. The level of change to the characteristic landscape can be high. These management activities may dominate the view of the casual

observer and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements of form. Line, color and texture found in the characteristic landscape. Currently, the class IV visual objectives are being maintained.

3.17 Cultural Resources:

Within the Herd Area the Twin Buttes and Bull Draw grazing allotments include areas containing some of the highest cultural resource site densities in the White River Resource Area. Sites include or are associated with prehistoric transportation corridors, resource acquisition localities, formative stage horticultural and occupation localities, historic transportation routes, mining and cattle ranching. The Herd Area also includes portions of the Canyon Pintado National Historic District, which contains numerous examples of Fremont rock art, listed on the National Register of Historic Places. Inventories in this Herd Area indicate a relatively high site density along with substantial favorable areas for prehistoric site locations. Previous inventories indicate that sites are mainly limited to areas adjacent to water, vantage point localities, in Pinyon/Juniper forest - especially with southern exposure, along transportation corridors, and on slopes of less than 30% (c.f. Conner 1995, Hauck 1994, 1997). The highest site densities appear to occur in the north while the upland areas to the south received less prehistoric use, although much of this pattern may be an artifact of the positioning of inventories. Portions of Herd Area contain steep (over 30%) slopes and are distant from water sources, while the majority of the land surfaces within the Herd Area are the more favorable Pinyon-Juniper ridges, bottomlands and steep cliff (rockshelter) areas. The highest currently recorded site densities occur in the western portion of the Herd Area such as in the West Texas Creek pasture on terraces and ridges above and near Douglas Creek. Site densities in the Herd Area west to Evacuation Creek may exceed 100 sites per section. It is expected that the Herd Area will contain mainly ephemeral lithic scatters and isolates in the dryer and more upland areas, while the lower ridges and valley bottoms will contain the more substantial occupation sites. The majority of the Herd Area is expected to contain an average of eight eligible sites per section. Using the figures of up to 100 sites per section and eight eligible sites per section and extrapolating against the entire Herd area, it is estimated that a total of 19,279 cultural properties may be located within the Herd Area boundaries, of which some 1,542 are potentially NRHP eligible sites.

Beginning in the late 1970's and continuing to the mid 1990's site recording standards for the State of Colorado asked that impacts from animals be noted on all site forms. The choices were usually "livestock" or "animals" with no distinction as to what kind of animal impacts were being noted. In the mid to late 1990's, as a result of court decisions, the level of detail and specificity as to the nature of animal impacts has been increased. Standard recording for the White River Field Office now requires that the nature of the animal impacts, specifically those which can be attributed to livestock or horses, be noted on all site forms. Older site forms, almost without exception, note animal impacts to sites in the area suggesting that trampling associated with trailing and congregating in favored areas along with rubbing and/or scratching on certain surfaces has been occurring. Site forms, almost without exception, also note erosion impacts to sites. Erosion is sometimes the most significant impact to sites as smaller artifacts are washed away, vertical spacing is compressed and some features such as hearths and activity surfaces are lost to the erosion process.

Human development related impacts are also noted throughout the area. Those impacts that are related to permitted developments are usually mitigated by avoidance to the extent possible. In some instances impacts are permitted as part of the development process after data recovery and preservation efforts have been completed. Impacts from unregulated human activities/development, such as hunting or other recreational activities, are also noted and are not often mitigated.

3.18 Paleontology:

The herd area is underlain by four formations, the Mesa Verde, the Wasatch, the Parachute Creek unit of the Green River Formation and the Garden Gulch/Douglas Creek unit of the Green River Formation. The BLM has classified the Mesa Verde, Wasatch and Parachute Creek formations/units as Condition I fossil bearing formations. This means that these units are of considerable scientific interest due to the presence of a wide variety of vertebrate fossils including dinosaurs, a wide range of mammals including what may be some of the earliest known forms and exceptional preservation of invertebrates, especially insects and plants. The Douglas Creek/Garden Gulch member of the Green River formation is currently classified as a Condition II formation meaning that its fossil bearing potential is currently not well documented or understood.

Quaternary alluviums are found in the bottoms of drainages, especially Douglas Creek and some of the larger tributaries. Quaternary alluviums are not considered fossil bearing and any fossils that might happen to occur would be likely regarded as “float” or remains that are largely out of context and of somewhat limited scientific value.

Prior to the 1997 White River RMP paleontological inventory in the herd area was very limited, mostly on a research basis only. Inventory was not conducted as a part of human development type projects. Fossil localities were known to be subject to trampling impacts from animals from reviews of scientific literature though no attempts were made prior to the RMP to address the issue in the herd area. When animal related impacts were noted there was no consistent attempt to attribute the impacts to livestock or horses or big game animals. The training process to condition paleontologists to note animal impacts to surface localities in the same manner that archeologists are used to doing for archaeological sites is ongoing.

3.19 Access and Transportation:

Since the herd area is over 96% contiguous federal land, private land obstacles to public access are practically non-existent. Vehicle travel routes throughout the herd area are well established via county roads, BLM roads, and oil and gas development roads. The road density is approximately 3.2 miles of road per square mile in the northern portion, but goes up to 4.8 miles per square mile in the central portion of the herd area. This is due to the large amount of oil and gas development which has occurred in these areas. The road density in the southern portion of the herd area is only about 1.3 miles per square mile, with no developed roads within the WSA. Map B-4 in Appendix B shows where primary, secondary, and other (mostly BLM or oil and gas access routes) are within the herd area.

3.20 Forest Management:

The Forest Management Program, within the herd area, consists of timberland management and woodland management. Approximately 1,196 acres are covered by Timberlands. The predominate tree species is Douglas-fir. Timberland management focuses on wood products measured in board feet and includes lumber, timbers and house logs. There are approximately 51,788 acres of woodland, with the predominate species consisting of pinyon, and Utah juniper. Woodland management focuses on products generally not measured in board feet and includes firewood (cords), juniper posts and poles. The White River ROD/RMP set an annual limit of 20 acres for clearcut, 70 acres of selective cut and 1,500 posts and poles for commercial harvest within the Douglas/Cathedral Geographic Reference Area. The West Douglas Herd Area makes up approximately 1/3 of the geographic reference area. Non-commercial harvest limits are restricted to dead and down, with the exception of specifically marked green tree areas. The forestry program offers the opportunity to remove vegetation through sales or free use that would otherwise be removed by other manipulation techniques (chaining, dozing, prescribed fire).

The Conditions of Approval within Appendix C, White River ROD/RMP, for Forest Stand Treatments would continue to be applied. Additional restrictions to forest treatments would be

identified during preparation of an Environmental Assessment prepared prior to authorizing a proposal.

3.21 Socio-Economics:

Population: Rio Blanco County is located in north western Colorado and is predominantly rural. Over the past 30 years its population has grown slowly relative either to the state or the nation reaching a high of 7,153 in 1983. Population slowly declined and stabilized at 6,011 by the 1990 estimate. The 2000 census found the Rio Blanco population as 5980. The population of Rio Blanco County is projected to grow at an annual rate of 1.94 percent until 2025 when it will reach 9,740. The county will continue to be largely rural with an increasingly older population.

Employment: Rio Blanco employment reached 4253 jobs in 2000. This is an increase of 1879 over the 1970 estimate of 2374 but a decrease of almost 644 jobs from the 1981 high of 4897. Employment has been largely stable since 1992. The year 2000 employment estimate shows the Rio Blanco economy dominated by the service sector followed by government. Mining, the dominant sector in the late 70s and early 80s, has declined precipitously in terms of employment from a high of 1890 jobs in 1981 to a recent 487 in the year 2000. Oil and gas exploration, a sub sector of mining provided 211 jobs in the year 1999. Agriculture has remained fairly stable over the past 3 decades providing 406 jobs in 1970 and 365 jobs in 2000. 1999 estimates find tourism to be responsible for 359 or 9 percent of Rio Blanco jobs. The majority of these jobs are located in retail trade or the service sector. Employment in Rio Blanco County is projected to grow at an annual rate of 2.48 percent until 2025 when it is estimated to reach 7861. Over this time period the unemployment rate is projected to average approximately 5 percent. Jobs will increasingly occur in the service sector and be dependant on the growing recreation/tourism industry.

Income: Rio Blanco annual per capita income has increased from \$4013 in 1970 to \$26039 in the 2000 estimate. The 1970 figure equals \$17810 in 2000 inflated dollars. Personal income is dominated by the Mining Sector which produced \$58.173 million in year 2000. Its oil and gas sub sector produced \$30.893 million. The Mining sector is followed by Non- Labor Income (see below) and Government \$32.79 million as income producing sectors. Services \$11.024 million and Agriculture (see below), considering their importance in employment, produce relatively low levels of income. Non-labor income is divided into two major categories which include: 1) Dividends, Interest, and rent; and 2) Transfer payments. Transfer payments include retirement age influenced income, income maintenance (welfare), and unemployment insurance benefits. Rio Blanco Non Labor Income totaled \$44.173 million in the year 2000 and is dominated by Dividends, Interest and Rent producing \$25.921 million. In year 2000 transfer payments produced \$18.252 million.

Rio Blanco gross farm income has declined from a high in the mid to late 1970s of \$30.526 million (year 2000 inflated dollars) to \$18.418 million in year 2000. Livestock dominates the agriculture sector producing \$14.469 million of the year 2000 total. When expenses are added to gross farm income it produces net farm income and for Rio Blanco County this figure was \$2.358 million. In other words agricultural expenses are greater than its income.

Big game hunting is an important income generating activity in Rio Blanco County. Big game management units with major acreages in Rio Blanco were estimated to draw more than 31,000 hunters in year 2001 (see Table 3-19). Total big game hunting expenditures for these game management units are estimated to have been over \$33 million. A significant but un-estimated proportion of these expenditures were spent locally.

Table 3-19: 2001 Big Game Hunting in Rio Blanco

GMU	Hunters	Estimated Expenditures
10	663	\$708,788.37

GMU	Hunters	Estimated Expenditures
11	3635	\$3,886,041.82
12	4386	\$4,688,907.69
21	1791	\$1,914,690.76
22	3914	\$4,184,310.23
23	5246	\$5,608,301.35
24	3591	\$3,839,003.08
30	818	\$874,493.04
31	1597	\$1,707,292.65
211	3688	\$3,942,702.13
231	1755	\$1,876,204.51
Total	31084	\$33,230,735.64

By the Year 2025 Rio Blanco Total Personal Income and Per Capita Personal Income are projected to rise substantially (in current dollars) to \$1039 Million, and \$106,727 respectively. Much of this projected rise however is due to a long term inflation rate assumed here to be 4 percent. Year 2000-2025 projections using deflated (year 2000) dollars are shown in Chart 4.4 & 4.5. Rio Blanco deflated Total Personal Income is seen to rise from \$167 Million to \$403 Million while Per Capita Personal Income is estimated to rise from \$27,825 to \$38,000. This estimated "real" rise in income is dependant on increasing oil and gas employment income, and greater demand for recreation related tourism. Farm income will continue to decrease in importance relative to the other sectors of the economy.

Unit Costs of the Wild Horse and Burro Program: Managing wild horses is not done without government expenditure. The table below show average unit costs for the Colorado program (Table 3-14. The data has been extracted from the BLM budget tracking system (Management Information System) calculating means for years 2000 through 2003.

The table shows activities associated with managing wild horses including: Adoption, Preparation and Holding, Gathering, Census Taking, and Regulatory Compliance. Units are in horses with the exception of Census which are shown in number of completed census activities accomplished. Direct Costs are those directly spent on wild horse activities. Unit Costs are simply direct costs divided by the number of units yielding a cost per horse or cost per census. Cost per Animal Gathered is a calculation that divides the sum of all direct costs or the sum of all total costs by the number of horses gathered. Cost per Animal Adopted is a calculation that divides the sum of all direct costs by the number of horses adopted.

Table 3-14: Mean Cost of the Colorado Horse and Burro Program Fiscal Years 2000-2003

Activity	Units	Direct Cost	Direct Unit Cost
Adopted	308.75	\$145,804	\$472
Prep & Hold	400.25	\$667,824	\$1,669
Gathered	245	\$136,070	\$555
Census	2.5	\$18,368	\$7,347
Compliance	311	\$52,808	\$170
Total		\$1,020,875	
Cost Per Animal Gathered			\$4,166.84
Cost Per Animal Adopted			\$3,306.48

Data Sources: Population, employment, and income data are taken from the Economic Profile System produced by the Sonora Institute (2003). Tourism data are taken from a study conducted for the Colorado State Demographics Office (Center for Business and Economic Analysis 2003). Hunting data are taken from a BLM Colorado State Office Study utilizing Colorado State Department of Wildlife hunting figures and U.S. Fish and Wildlife Service 1996 Hunting Survey statistics (DOW 1996).

3.22 Elements of the Environment not Present or not Affected: Air Quality, Native American Concerns, Flood Plains and Wetlands, prime and unique farmlands, wild and scenic rivers, areas of critical environmental concern, hazardous wastes, Fire Management, and environmental justice; all of which are specifically protected by federal law or regulation; are either not present in the planning area, or would not be affected by the alternatives.

Section 4: Environmental Consequences and Mitigation

4.1 Wild Horses:

Impacts from Alternatives A: Under this alternative the 1997 Land Use Plan Decision would be brought forward. All wild horses would be removed from the West Douglas Herd Area by 2007.

Horses would not occupy private lands and would not relocate outside the West Douglas Herd Area.

Direct impacts to the herd are as follows: The herd would no longer exist. Genetics and history unique to this herd would be lost. The majority of horses in the herd would be placed with adopters. Horses not adopted locally would be transported to the BLM Canon City holding facility for preparation and placed in accordance with current policy.

Impacts from Alternative B: The entire West Douglas Herd Area, encompassing 123,387 acres, would be designated a Herd Management Area (HMA). The herd would be managed at an initial Appropriate Management Level (AML) of between 29 and 60 wild horses. This AML range is believed compatible with available habitat, and reflective of a natural, thriving ecological balance (TNEB) with the other resources. Wild horses managed at the numbers identified in this alternative are expected to slowly expand throughout their HMA, and to remain within the HMA boundary so long as the current quality and variation of habitat is maintained. Range improvement projects would be implemented to maintain TNEB among the various range users, to increase distribution of wild horse bands within the HMA, and to encourage wild horses remain inside the HMA.

The AML range is not sufficient to strengthen existing herd genetic diversity. Future health of this herd would rely, in a large part, on increasing genetic diversity through the introduction of mares from other herds and by manipulating herd sex ratio to encourage the formation of numerous small bands and consequent increased contribution of breeding age animals in the herd. Both these factors rely on spatial overlap of existing wild horse bands during the breeding season. Band overlap and consequent genetic exchange in the herd may succeed with minimal human interference other than introducing mares into the herd and maintaining sex ratio at approximately an equal ratio. Conversely, the relatively large number of acres proposed, combined with the low number of horses being managed could result in ineffective spatial overlap between bands and consequential ineffective genetic exchange in the herd. Either scenario could occur. Both scenarios could intermittently occur in response to unknown factors. Herd genetics would be analyzed on a scheduled basis to monitor herd genetic diversity.

The introduction of wild horses from outside the West Douglas Herd Area would dilute existing herd genetics, but would increase genetic viability in the herd.

Approximately 38 wild horses would be captured in order to remove 30 horses during each gather project.

The 1982 National Research Council Report makes the distinction between dietary overlap and competition. Dietary overlap between ungulates occurs without negative impacts to the vegetative resource when vegetative resources are in adequate supply to meet the nutritional needs of the various species. Competition only occurs when dietary overlap is coupled with a short supply of the forage being shared by the ungulate species. NRC recognizes dietary overlap between cattle and wild horses, and between elk and wild horses. NRC states that minimal dietary overlap occurs between wild horses and mule deer. The NRC report concludes that wild horse and deer competition is linked more closely to dominance and displacement rather than to diet.

Mitigation Measures: Inventories would be conducted to understand seasonal distribution of horses, to document seasonal spatial overlap between wild horses and wildlife; to assure wild horses remain within the management boundaries, and to monitor wild horse interaction/competition with wildlife and livestock; wild horse interaction with human development, and possible conflicts between wild horses and the other resources.

Range improvements including water development, habitat manipulation and drift fencing would be considered to mitigate impacts to the herd resulting from human development, to decrease competition between the range users; to encourage increased band distribution through the HMA; and to discourage wild horse drift outside the HMA.

The lack of perennial waters in the northern HMA likely contributes to the horses' preference for the southern portion of the HMA. Water development in the central and northern portions of the HMA would be considered to increase distribution if distribution remains concentrated in the southern portion of the proposed HMA and if distribution becomes a concern in the successful, long-term health of the wild horse population.

Mares or studs may be moved between bands during each gather and additional mares would be introduced from other herds to encourage increased genetic exchange in the herd. These actions are expected to partially offset the risk of slow or ineffective herd genetic recovery brought about by the low herd size and the relatively large amount of acreage contained in the HMA.

The herd would be managed for an equally proportion of mares and studs to encourage the maximum number of breeding horses contribute to herd genetics. This would be accomplished through selection during gather activities.

Bachelor bands would be removed during gathers to avoid overly skewing the herd towards male horses.

A census would be completed prior to each gather project to assure the removal of the proper number of horses and to aid in determining bands prioritized for removal; and bands best left undisturbed.

The success of managing a small herd in the geographic area identified in alternative B, and any management changes deemed necessary would be analyzed and determined through an environmental assessment prior to each gather activity.

Cumulative Impacts:

Alternative B: Human development is estimated to impact 550 acres short term and 9,420 acres long term within the Herd Area. Wild horse forage lost from permanent development sites is expected to be balanced with forage gained from reclaimed sites. Range improvements including forage manipulation and water development may be implemented to balance habitat losses resulting from human development.

Future human development in the southern portion of the HMA could cause increased spatial and dietary competition between wild horse bands and between wild horses and other ungulates. Wild horse habitat would be lost in direct proportion to the density and location of the development. Habitat loss would partially be mitigated through the construction of range improvement projects. Consequences of the projected development are expected to result in one or more of the following scenarios:

Wild horses adapt to the increased development and continue to concentrate in the southern portion of the HMA. Seasonal home ranges, preferred habitat, band integrity and band interaction do not change to a notable degree. Range improvement projects partially mitigate the habitat loss associated with development.

Wild horses react to the increased development by redistributing throughout the Herd Management Area, or into portions of the Herd Management Area currently not utilized by wild horse bands. Competition between wild horses and other ungulates decreases as wild horse bands redistribute through an increased area.

Wild horse bands will not travel through the band of development in the central HMA. A portion of the herd relocates outside the HMA management boundaries. These will either be captured and placed into adoption or returned to the HMA. Some horses remain in the HMA.

The 9,420 acres estimated to be impacted by human development in the long-term could result in the displacement of wild horses despite implementation of range improvement projects. Herd adaptation would continue to be monitored with management changes determined as deemed necessary.

The range of 29 to 60 wild horses identified in alternative B is expected to successfully co-exist with livestock so long as livestock numbers do not significantly increase in the short or the long-term. The upper management range of 60 horses identified in alternative B equates to fewer horses than have occupied the West Douglas Herd Area since 1991. Decreasing wild horse herd size to a range of 29 to 60 horses and allocating forage between horses and cattle is expected to decrease wild horse competition with livestock for forage, water and cover with consequent increases in wild horse herd health and vigor.

Herd health and band distribution and integrity will be monitored to determine impacts that may result from the factors identified above and will be analyzed through an environmental assessment prior to each scheduled wild horse gather activity.

4.2 Rangeland Management:

Impacts from Alternative A: The current Permitted Use to livestock of 9,080 AUMs within the herd area would be maintained. There would be no changes in the permitted use for the grazing permittees. The current Twin Buttes Allotment Management Plan would be the basis for livestock management on the allotment.

Removing horses would increase the flexibility of the livestock operation in terms of planning movements of livestock and managing forage resources. This is particularly important during the spring period on the West Texas Cr. and East Texas Cr. Pastures (including the chainings) to provide proper forage utilization and deferment of the Winter/Spring ranges.

Historically the wild horse population ranged between 60-80 horses. Under this alternative the wild horses would be removed. Wild horse associated localized overgrazing and season-long grazing which has maintained sub-optimal forage resources would be eliminated, as would direct conflict between horses and cattle.

Impacts from Alternative B: The current forage allocation to livestock of 9,080 AUMs would be reduced to 8,330 AUMs (-750 AUMs) to sustain a herd of between 29 and 60 wild horses. This would be a reduction of 63 cattle using the allotment on a year round basis. The current Allotment Management Plan (AMP) would be revised to reflect the retention of horses. This would require changes in the livestock operation including; modifying numbers of livestock and periods of use. There may be a need for additional range improvements, and land treatments.

Retaining horses would decrease the flexibility of the livestock operation in terms of planning movements of livestock and managing forage resources.

Historically the wild horse population ranged between 60-80 horses. Under this alternative the wild horse population would be decreased to a range of 29-60 head. Wild horse impacts to the

livestock operation are expected to decrease proportionally to the reduction in horse numbers. Current problems of localized overgrazing and season-long grazing, which has maintained sub-optimal forage resources would be improved in the Texas Mountain area, as would direct conflict between horses and cattle. Over the long term, rangeland monitoring studies would provide data which would be used to modify livestock numbers, periods of use and Permitted Use.

Mitigation Measures: Both alternatives-Vegetation monitoring studies along with climate and actual livestock use data would be used to monitor rangelands to determine the success of the grazing program, and determine progress in meeting the standards for rangeland health. Monitoring studies would quantify adjustments in carrying capacity, periods of use by pasture, and the need for range improvements.

Cumulative Impacts: Under both alternatives, grazing management would be modified based on monitoring data. Changes resulting from monitoring could include modification in Permitted Use (decreases or increases in AUMs), modifications of periods of use. The current land use plan identifies objectives for vegetation health and guidelines for the management of livestock.

Impacts to the livestock operation from human development have included physical damage to livestock, including pipe collars being caught on the feet of calves; poisoning of livestock resulting from drinking reserve or production pit water; livestock falling into open pipeline trenches; livestock vehicle accidents. Human activity in the herd area is projected to disturb 550 acres over the short term and 9,420 acres over the long term. Initially there would be a forage loss and displacement of livestock on these disturbed sites. These same areas are reclaimed over time and often contribute more forage than the previous plant community. Livestock are habituated to human development and readily graze reclaimed areas adjacent to human development. Using range improvement projects to improve livestock distribution has been only marginally successful because of the need to modify livestock habits. Using the mitigation measures, described above, changes in vegetation resulting from human development and livestock would be monitored and used to modify the grazing management program.

Alternative B: Managing for a herd of horses would reduce the livestock permitted use 750 AUMs over the long term. If livestock are displaced from the Texas Mountain area because of human disturbance, additional reductions to livestock beyond 750 AUMs may be required.

4.3 Vegetation:

Impacts from Alternative A: Vegetation decisions of the White River ROD/RMP would continue to apply under this alternative. The carrying capacity for the Herd Area would be approximately 9,080 AUMs. Following removal of all horses the livestock grazing management program outlined in the Twin Buttes Allotment Management Plan would be implemented. Removal of horses is expected to improve localized areas that were subject to season long grazing in the East and West Texas Creek pastures. Sites which are currently blue grama dominated are expected to remain unchanged in condition and trend. There is expected to be improvement in the acres meeting the standards for vegetation health on the Cottonwood, Lower Horse, and Water Canyon because of improved livestock distribution and implementation of the grazing program. These improved acres would be within the rolling loam, alkaline slopes and foothills swale range sites. Key to management of the rangelands would be the use of monitoring studies to document vegetation use, condition and trend. These studies would be the basis for implementing the vegetation decisions of the White River ROD/RMP, through development of range improvements, determining carrying capacity, modifying periods of use and numbers of livestock.

Under this alternative management of noxious weeds by the BLM, County and Grazing Permittees would be maintained. Cheatgrass infested ranges are expected to improve, due to removal of wild horses.

Impacts from Alternative B: Vegetation decisions of the White River ROD/RMP would continue to apply under this alternative. Horses would be managed at a range of 29-60 head of horses,

which is approximately a 50% decrease in horse use. The Twin Buttes allotment management plan would be modified to reflect management of horses. Objectives of the Allotment Management Plan would provide forage species the opportunity to meet physiological requirements for growth, reproduction and carbohydrate storage. Wild horses are expected to continue to use their preferred ranges and maintain early seral vegetation conditions on approximately 450 acres within the West Texas and East Texas Pastures. There is expected to be improvement in the acres meeting the standards for vegetation health on the Cottonwood, Lower Horse, and Water Canyon because of improved livestock distribution and implementation of the grazing program. These improved acres would be within the rolling loam, alkaline slopes and foothills swale range sites. Key to management of the rangelands will be the use of monitoring studies to document vegetation use, condition and trend. These studies would be the basis for implementing the vegetation decisions of the White River ROD/RMP, through development of range improvements, determining carrying capacity, modifying periods of use and numbers of livestock, and determining the appropriate management level for horses.

Under this alternative management of noxious weeds by the BLM, County and Grazing Permittees would be maintained. Cheatgrass infested ranges are expected to improve, due to reduction of wild horses.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): The table below shows the anticipated changes in acres meeting and not meeting the Standard for Public Land Health for plant communities by alternative and pasture. This table uses the Current Situation as a basis for comparison. A pasture-by-pasture analysis was conducted for each alternative. Changes identified are expected to occur over a twenty-year period. This analysis found little difference between removing horses and retaining horses. The reason for this is both alternatives rely on vegetation monitoring for future management decisions. Both livestock and wild horse numbers can be matched to the available forage, livestock use periods can be modified and range improvement projects can be developed to improve distribution of animals. Those acres not achieving the land health standards would be those adjacent to water sources on which livestock concentrate, and those communities in a depressed condition on which physical manipulation would be required for rehabilitation.

Table 4.1: Finding on the Public Land Health Standard for Plant Communities by Acreage

Pasture	Current Situation Average 80 Horses		Alternative A (Implementing Existing RMP Decision)		Alternative B (Wild Horse Herd Entire Area)	
	Acres Achieving	Acres Not Achieving	Acres Achieving	Acres Not Achieving	Acres Achieving	Acres Not achieving
Cottonwood	13245	1099	14198	146	14198	146
Upper Horse	8943	1059	9719	283	9719	283
Water Canyon	21838	1284	22880	242	22880	242
E. Texas	20148	593	20219	522	20219	522
N Texas	17058	831	17801	88	17801	88
W Texas	18241	1372	19031	582	18710	903
W Creek	7061	166	7061	166	7061	166
Water Hole	41	0	41	0	41	0
Park	882	0	882	0	882	0
Bull Draw Allotment	9526	0	9526	0	9526	0
Totals	116983	6404	121358	2029	121037	2350

*Achieving=Plant communities that are achieving the standards for public land health for vegetation resources.

Not Achieving= Plant communities that are not achieving the standards for public land health for vegetation resources.

Another requirement of the Standard for Public Land Health is "Noxious weeds and undesirable species

are minimal in the overall plant community.” The table below shows the expected changes in noxious weeds and cheatgrass for each pasture by alternative. This information is based in the alternative descriptions for vegetation.

Table 4.2: Finding on the Public Land Health Standard for Plant Communities (Noxious Weeds and Cheatgrass)

Pasture	Expected Trend in Noxious Weeds and Cheatgrass (<u>Bromus tectorum</u>) Acreages		
	↑ Improving Conditions/Decreased Acreages ⇔ Stable or No Change in Acreages ↓ Declining Conditions/Increased Acreages		
	Current Situation	Alternative A	Alternative B
Cottonwood	⇔	↑	↑
Upper Horse	⇔	↑	↑
Water Canyon	⇔	↑	⇔
E. Texas	↓	↑	⇔
N. Texas	⇔	↑	↑
W. Texas	↓	↑	↑
W. Creek	⇔	↑	⇔
Water Hole	⇔	⇔	⇔
Park	⇔	↑	↑
Bull Draw Allot	↑	↑	↑

Mitigation Measures: Vegetation monitoring studies and evaluation of those studies would be used to determine acres meeting the standards for rangeland health. These studies would be used for; documenting carrying capacity, determining the need for range improvements and land treatments, modifying livestock periods of use by pasture, adjustments in livestock numbers and the wild horse AML.

Cumulative Impacts: Livestock grazing, wild horses and human development impact vegetation condition and production. Human development is expected to impact 550 acres short term and 9,420 acres long term within the herd area. Vegetation monitoring studies would be used to balance the competing uses for vegetation.

4.4 Water Quality:

Impacts from Alternative A: Livestock are managed in a manner to allow for vegetation rest during the growing season, while horses graze year-round. Removal of wild horses would allow the vegetation to rest during the growing season. With this rest, the removal of wild horses is expected to improve watershed stability, decreasing sediment and salts, which would improve water quality.

Impacts from Alternative B: Horses would be managed at a range of 29-60 head of horses. Although this would result in an approximate 50% decrease in horse use, the decrease would not address the manner in which wild horses are managed as opposed to livestock. Livestock are rotated to different pastures allowing rest during the growing season, where as horses may graze at any location, year-round. Overuse would deplete the vegetative cover needed to protect watersheds from runoff and erosion and could cause long-term watershed problems. Surface water quality is maintained and improved when it passes through healthy soil and vegetation communities. These areas act like a combination sponge and filter that slows overland flow of water and helps retain soil on the land where it is an asset, as opposed to in the water, where high levels of soil can become a problem.

Finding on the Public Land Health Standard for water quality: This standard states that water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of

Colorado. Water Quality standards for surface and ground-waters include the designated beneficial uses, numeric criteria, narrative criteria and antidegradation requirements set forth under State law (5 CCR 1002-8) as required by Section 303(c) of the Clean Water Act. Indicators for achieving these standards are: appropriate populations of macro invertebrates, vertebrates, and algae are present and surface and ground waters only contain substances (e.g. sediment, scum, floating debris, odor, heavy metal precipitates on channel substrate) attributable to humans within the amounts, concentrations or combinations as directed by the water quality standards established by the State of Colorado (5 CCR 1002-8).

Based on the number of animals being managed by alternatives, overland runoff would contribute larger amounts of the substances identified above when a larger population of wild horses is being managed. Sediment would be the substance that would most likely increase with a decrease in vegetation cover. Currently the state does not have a numerical standard for sediment loads. Until a threshold is developed for sediment, the overall landscape of the area would meet the water quality standards set by the State, and none of the alternatives would affect the finding on the Land Health Standards.

Mitigation Measures: For alternative B, In addition to mitigation in the vegetation section above, BLM would need to develop water sources to decrease concentration of horses on existing water sources and in drainage bottoms.

Cumulative Impacts: Human related development would likely continue in the herd area and as a result, short-term (10 years) development are expected to disturb 550 acres of vegetation and long-term development would disturb 9,420 acres of vegetation impacting water quality by exposure of soils to climatic elements resulting in erosion of sediment and salt, and piping or rill erosion. Through the use of Best Management Practices (BMPs) and vegetation monitoring to balance uses, these short and long-term impacts would be mitigated.

4.5 Hydrology and Water Rights:

Impacts from All Alternatives: None of the alternatives would impact the status of water rights in the herd area. See Section 4, Paragraph 4.2 (Rangeland Management) for a discussion of water sources and spring maintenance.

Mitigation Measures: Continue to secure water rights through the State of Colorado Water Courts for BLM applications.

Cumulative Impacts: None of the alternatives would have an affect on cumulative effects to water rights secured by the BLM.

4.6 Riparian Zones:

Impacts from Alternatives A and B: Under both alternatives grazing use of West Douglas and West Creeks, riparian area is physically limited by the incised channels and beaver ponds which act as enclosures. These areas continue to improve and develop. Where livestock do have access to the stream channel, livestock use is localized and heavy. Riparian habitat is expected to continue to improve in terms of woody composition, and channel stability. No adverse impacts to riparian habitats have been documented, or are expected, as a result of grazing use by wild horses.

Livestock use On Main Stem Douglas Creek is primarily during the winter and spring with a four year livestock management program requiring removal of livestock by May 15, May 31, April 1 and May 1, providing for total deferment one year and partial deferment two of the four years. A group of wild horses (4-6) has been using Main Douglas Creek in the vicinity of Vandamore Draw. The riparian area continues to develop and improve under these current uses and management. Riparian conditions around springs are expected to remain unchanged unless physically modified by development. Developing of springs commonly includes piping water to an offsite trough and fencing of the spring source and functional riparian sites.

Finding on the Standard for Public Land Health for Riparian Systems: Based on the impacts described for each alternative above, the standard for public land health for riparian systems will be affected as described in the following table:

Table 4.3: Finding on the Public Land Health Standard for Riparian Systems:

Watershed	Condition of Stream by Stream Miles					
	Current Situation		Alternative A		Alternative B	
	Functioning	Not Functioning	Functioning	Not Functioning	Functioning	Not Functioning
West Creek	1.2	0	1.2	0	1.2	0
West Douglas Ck	2	0	2	0	2	0
Main Douglas Ck	4.8	0	4.8	0	4.8	0
Totals	8	0	8	0	8	0

Mitigation Measures: Enhance riparian development at springs by preventing access to the source and providing water outside of the riparian area.

Cumulative Impacts: Alternatives A and B- Impacts to riparian systems would be associated with livestock grazing and human development. As stated above livestock use of the riparian area is physically limited and this situation is not expected to change. Human development would directly impact riparian systems through physical disturbance of vegetation and stream channels. Human development impacts are expected to be localized and subject to mitigation developed in site (project) specific environmental assessments. Mitigation included with the Vegetation section would balance use of vegetation communities with livestock, wildlife and wild horses (Alt B) preventing increased use of riparian areas.

4.7 Soils:

Impacts from Alternative A: All 52,570 acres of fragile soils areas, which are protected from development impacts by CSU-1 in the current RMP, would be available for grazing. However, removal of wild horses would be advantageous to soil productivity and soil stability simply because there would be less use to the protective vegetative cover. In addition, this alternative would eliminate yearlong grazing pressure because livestock are able to be managed to allow for pasture rest and rotation which allows for better vegetation cover and more productive soils.

Impacts from Alternative B: Under this alternative the BLM would manage 29-60 horses. Although the horses would not be limited to any area it is expected they would stay within their preferred habitat. Currently, the upper tributaries of Evacuation Creek are in the preferred horse habitat. There are two soil stabilization projects that have been implemented within the Evacuation Creek watershed to slow soil erosion, improve vegetation cover and help reduce salinity levels to the Colorado River Basin. Allowing year round grazing in this fragile watershed would be in direct conflict with the objectives of the soil stabilization projects, although reducing the number of horses by approximately one-half will allow improvement of soils except on localized areas of preferred wild horse habitat.

Finding on the Public Land Health Standard for Soils: This standard states: upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soils infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff. Indicators of this standard are: expression of rills and soil pedestals is minimal, evidence of actively-eroding gullies (incised channels) is minimal, canopy and ground cover is appropriate, with litter accumulating in place and is not sorted by normal overland water flow, there is appropriate organic matter in soil,

there is diversity of plant species with a variety of root depth, upland swales have vegetation cover or density greater than that of adjacent uplands, and there are vigorous, desirable plants.

In Alternative A, removal of the horses is expected to allow the soil the opportunity to improve and work towards achieving the standards. Season-long grazing (prolonged use during the growing and dormant seasons) is a primary cause of soils not meeting the Land Health Standards which is would occur under Alternative B. Table 4.4, below; lists the acres of public land within the herd area that would be expected to achieve this standard under each of the alternatives. This table shows the anticipated impacts of wild horses and livestock on bottomland soils only. It is likely that additional upland soils would not meet this standard, but these acres are not included in this table because of the difficulty predicting the distribution of animal impact. These acres would not be additional to those identified in the vegetation section.

Table 4.4: Land Health standard for Soils by Watershed

Acres Achieving/Not Achieving the Land Heath Standard by Alternative				
Watershed	Alternative A: Implement Existing RMP Decision		Alternative B: Wild Horse Herd Entire Herd Area	
	Achieved	Not Achieved	Achieved	Not Achieved
Cottonwood	19,361	63	19,235	189
Douglas Ck	79,355	1,338	78,813	1,880
Evacuation	26,412	744	26,156	1,020
Hells Hole	846	0	846	0
Totals	125,974	2,145	125,050	3,089

Mitigation Measures: Adhere to the soil management objective established in the White River ROD/RMP, which is to prevent impairment of soil productivity due to accelerated erosion and physical or chemical degradation resulting from surface use activities. Management actions support the goals provided as indicators in Standard One of the Standards for Public Land Health.

Cumulative Impacts: Cumulative impacts to soils were analyzed in the White River RMP and would apply to Alternative A. For Alternative B, managing 20-69 horses in a herd area could decrease vegetation productivity exposing an unquantifiable amount of soil to climatic elements. The proposed vegetation monitoring and evaluation of human uses would provide guidelines for implementation of a proper grazing regime and in conjunction with the use of BMPs, healthy soils should be maintained.

4.8 Wilderness:

Impacts from Alternative A: Wilderness:

NATURALNESS: Removal of wild horses would allow for improvement of within northeastern portions of the Oil Springs Mountain WSA. There are expected to be improvement to native flora and native fauna and overall naturalness. Noxious plant species (cheatgrass) would likely decrease in composition and improve the integrity of the natural functioning ecosystem.

SOLITUDE: Removal of wild horses typically would include use of helicopters during gathers, which would, for the duration of gather, impact wilderness users that could see or hear the helicopter. Under this alternative, this event would most likely occur only once during removal of all wild horses. However, it is possible that not all horses would be captured in a single gather, so it may be prudent to assume that multiple helicopter flights would be necessary which would

increase the likelihood of impacting solitude. No such impact would occur after all horses have been removed.

PRIMITIVE & UNCONFINED RECREATION: It has been suggested, in similar areas where horse herd areas and WSAs coincide such as the Little Bookcliffs WSA on the Grand Junction Field Office, that wild horses add to the primitive recreation experience as they add to the free and wild character of the landscape and their removal would decrease primitive and unconfined recreation opportunities such as wild horse viewing and photography. By removing wild horses, these opportunities will be lost.

SPECIAL FEATURES: By removing wild horses, a supplemental value to the WSA will be lost.

Impacts from Alternative B:

Wilderness:

NATURALNESS: This alternative allows for the continued utilization of preferred habitat by wild horses which include northeastern portions of the Oil Springs Mountain WSA. Reducing wild horse utilization by approximately one-half would allow some improvement in vegetation communities. On sites preferred by wild horses current conditions of limited native flora and native fauna would continue, maintaining limited naturalness. Noxious plant species (cheatgrass) would likely continue to persist limiting the integrity of the natural functioning ecosystem.

SOLITUDE: Periodic low flying helicopter gathers and census operations would occur at regular intervals and this event could impact wilderness users by introducing the sight and sound of mechanized equipment which would disrupt the experience of solitude. Although this impact would be temporal, the impact would occur at regular intervals into the future thus having a greater probability to impact wilderness users.

PRIMITIVE & UNCONFINED RECREATION: It has been suggested, in similar areas where horse herd areas and WSAs coincide such as the Little Bookcliffs WSA on the Grand Junction Field Office, that wild horses add to the primitive recreation experience as they add to the free and wild character of the landscape and their removal would decrease primitive and unconfined recreation opportunities such as wild horse viewing and photography.

SPECIAL FEATURES: By retaining wild horses, a supplemental value to the WSA will persist.

Mitigation Measures: Avoid high-use public use periods such as fall big game hunting seasons and weekends when implementing wild horse gather and census operations.

Cumulative Impacts: If pre-FLPMA oil and gas leases located within the Oil Spring Mountain WSA are developed, those developments would likely lead to impacts on naturalness, solitude, opportunities for primitive or unconfined recreation and special or supplemental values.

4.9 Geology and Minerals:

Impacts from Alternatives A and B: Alternatives A and B represent continuation of the status quo insofar as geology and minerals are concerned. The decisions made in the White River RMP regarding the use of best management practices and the imposition of special lease stipulations would not be changed, and the impact analysis in the RMP would remain appropriate. Therefore, there would be no impacts to geology and or minerals under these alternatives.

Mitigation Measures: None

Cumulative Impacts: Since both alternatives represent continuation of the status quo as analyzed in the White River RMP, the cumulative impacts to geology and minerals, as addressed in that document, remain unchanged.

4.10 Land Status and Realty Authorizations:

Impacts from Alternatives A and B: Both alternatives represent continuation of the status quo in terms of realty authorizations. Since no new stipulations beyond those already imposed under the RMP would be imposed, there would be no impact to land use authorizations, or the ability to site new authorizations, under this alternative.

Mitigation Measures: None

Cumulative Impacts: None

4.11 Wildlife:

Impacts from Alternative A:

Big game

Near term removal of horses from the West Douglas herd area would substantially reduce season-long grazing use from the Oil Spring/Texas Mountain complex that respectively supports 3 and 10 percent of the deer and elk summer habitats available in Game Management Unit (GMU) 21. It would also reduce collective ungulate grazing intensity by about 10% across nearly 10% of both the general deer winter ranges and elk severe winter ranges within the GMU. Reducing the overall grazing load through horse removal would provide both immediate and longer-term indirect improvement in big game forage conditions throughout the year.

Big game summer use and fawning and calve-rearing habitats in the Oil Spring/Texas Mountain area are tied to the availability of a limited number of upland springs. Considering the attraction of water for all summer/fall grazers, about 6,000 acres of bottomland and mixed-shrub habitats within two miles of water are subjected to persistent growing season use. Accelerated declines in the availability of preferred herbaceous forage through concentrated grazing use or failure to accumulate sufficient herbaceous litter to prolong soil moisture retention reduces the prospects of deer or elk maintaining favorable nutritional status through the fawn or calf-rearing period. With removal of cattle from the Oil Spring/Texas Mountain area by early June, and without the continued influence of horses, the vigor, abundance, and variety of preferred big game forages are expected to improve. Horse removal would reduce average cumulative ungulate use in June, July, and August by 70%, easing pressure on a limited herbaceous forage base in the short term and increasing the likelihood of long-term recovery of rangeland productivity and plant diversity in favored big game summer habitats. Particularly on the estimated 1,600 acres of early seral bottomland and shrubland habitats in the East and West Texas and West Creek pastures, reduced growing season use would increase the vigor and seed production of native herbs and arrest and, in the longer term, reverse adverse shifts in herbaceous composition (i.e., annuals and warm season perennials), thereby increasing the availability of cool season grasses and broadleaf forbs important to elk and deer during the spring, summer, and fall.

Livestock effects are primarily manifested on lower elevation big game winter range pastures (north half of herd area) with strong reductions in the amount of residual ground cover remaining into the growing season (i.e., intensive dormant season use) and prolonged use of emerging herbaceous growth in spring (i.e., retarding improvement in the composition and density of herbaceous ground cover as a spring forage source). Horse removal and implementation of the Twin Buttes livestock grazing program are expected to improve herbaceous forage availability on at least 3500 acres in lower elevation pastures within the Herd Area and contribute to improved status on about 850 acres within those pastures encompassing the core use areas of horses.

In and of itself, horse removal would reduce cumulative ungulate grazing loads on big game winter ranges in the herd area by no more than 5% (i.e., 10% reduction in collective grazing use on about 30% of big game winter range in herd area), although localized effects would be more pronounced in preferred bottomland sites in the East and West Texas pastures and on elk severe

winter ranges where about 165 AUMs of horse use during June, July, and August would be removed.

In summary, removing use attributable to horses would provide a nominal buffer which would help stabilize current levels of cumulative ungulate use on big game winter ranges as deer population objectives are realized, reduce the potential for localized depletion of herbaceous forage on spring/fall ranges and, consequently, the premature or exaggerated reliance of big game on woody forages.

Grouse

Horses make consistent year-round use of the open mountain shrub and sagebrush communities which comprise general summer, nesting and/or brood-rearing habitats for grouse in the Oil Spring/Texas Mountain area. Although improvements have been made in livestock grazing management, a recurring issue identified on each pasture during the latest grazing evaluation is the need to improve litter accumulation and increase the native component in understory composition. From the wildlife perspective, this issue indicates strong reductions in residual ground cover during the dormant season and/or late in the growing season, as well as persistent growing season use that suppresses plant vigor and competitiveness. Cumulative cover height reductions through July, particularly near water, are sufficient to substantially reduce the utility of grouse brood and nest ranges. Alterations in the composition of herbaceous communities also involve increased expression of annual (cheatgrass, mustards), introduced (Kentucky bluegrass), or grazing tolerant (grama) species which fail to offer comparable persistence, structure, or production as substrate for invertebrate prey and/or supplemental cover for reproductive functions.

At this point in time and under prevailing levels of big game, livestock, and horse use, the overall trend in herbaceous community condition is static or declining, implying that collective ungulate use is currently more intensive or more persistent than thresholds that would allow for recovery and/or improvement of understory conditions. Removal of horses is expected to reduce the progressive decline of herbaceous cover on 2,400 acres of blue grouse nest and brood habitats in the herd area. Because cattle are removed by the first week of June, understory vegetation would be allowed up to 3 weeks to redevelop vertical cover more suitable for effective use by nesting birds and broods. Horse removal is expected to reduce collective ungulate use June through August by 70% and would prompt long term improvements in plant vigor, ground cover density, and help suppress the appearance of grazing tolerant species in understory composition.

Non-game

Removal of horses would reduce cumulative ungulate grazing intensity by 70% during the months of June, July, and August, initiating long-term improving trends in herbaceous vigor and density and allowing for redevelopment of herbaceous understories during the non-game reproductive season in those habitats that have been subjected to season-long grazing by horses in the Oil Spring/Texas Mountain area. Enhanced understory expression would be most evident on the nearly 6,000 acres of bottomland and mixed-shrub habitats within 2 miles of water that receive concentrated ungulate use. Implementation of the Twin Buttes AMP would prompt small and perhaps unremarkable reductions in use intensity on about 8,000 acres of early and mid-seral rangelands in the herd area that receive concentrated livestock use at lower elevations. Small increases in residual ground cover may marginally enhance forage and cover availability for fall and winter use by small mammals and early spring cover for ground nesting birds. These improvements would involve about 20% of the big sagebrush, mountain shrub, and saltbush communities within GMU 21.

Reduced upland use attributable to horse removal would have little influence on riparian conditions in mainstem and West Douglas Creek or West Creek channels. Long-term improvements in channel and floodplain character that have favored expansion and improved continuity of woody and herbaceous riparian habitats for those birds (e.g., see migratory bird

section) and mammals (e.g., bats, montane and long-tailed vole) associated with well developed riparian habitats would continue.

Under this alternative, about 2,000 acres of bottomland and shrubland sites would persist in failing to meet Public Land Health Standard for vegetation. These acreages represent about 3% of like types within GMU 21. Although no structured avian population monitoring occurs in the herd area, there are no indications that avian communities or their associated habitats are being subjected to widespread or acute habitat modification that would adversely influence or jeopardize the viability of any regional population in the short term.

Small mammals associated with shrublands within the herd area (e.g., sagebrush and long-tailed vole, northern grasshopper mouse, Uintah chipmunk, Merriam's shrew) consistently display broad ecological tolerance, and no small mammal species is known to be strictly confined to those bottomland communities that are most significantly influenced by grazing use. Even with strong localized suppression of small mammal abundance on heavily used or modified sites, there are no indications that habitats are subject to broad-scale deterioration or that populations are becoming effectively isolated.

Impacts from Alternative B:

Big game

Alternative B represents an average 50 percent reduction in current horse numbers. The quantity of forage consumed by horses during the summer use period (June through August) would be, on average, comparable to that consumed by deer and elk summering on the Texas and Oil Spring Mountain complex.

Reductions in horse populations would, on average, reduce cumulative summer (June through August) grazing intensity on deer and elk summer habitats associated with the Oil Spring/Texas Mountain complex by about 30%. This reduction is expected to allow for modest improvement in plant community composition on 540 acres within the Texas Creek pastures, which encompass big game summer ranges in the Herd Area. However, particularly with significant increases in short term livestock use through late May (associated with Twin Buttes grazing plan), the effects of continued summer-long grazing regimens associated with dual horse/big game use would be expected to generally maintain current understory characteristics (i.e., available production expressed by cover height and density) on those 3,665 bottomland and shrubland acres preferred by horses during the summer.

Under prevailing levels of big game, livestock, and horse use, understory character in preferred horse use areas continues to regress, implying that collective ungulate use is currently more intensive or more persistent than thresholds that would allow for recovery and/or improvement of understory conditions. Thirty percent reduction in summer season use by horses and big game would intermittently allow for increased herbaceous growth in these shrubland and bottomland sites (e.g., first two years after successful gathers), but persistent season-long use on favored sites would be expected to retard community-level advances in plant density, ground cover, or herbaceous composition.

Static trends or diminutive gains in herbaceous forage conditions on big game critical summer habitats would fail to contribute to the timely improvement of forage properties considered paramount in elevating the nutritional status and enhancing the reproductive performance of GMU 21's mule deer populations. Horse-induced displacement of big game from critical summer habitats would contribute incrementally to continued declines in the utility (i.e., effective extent) of critical deer habitat and would not complement efforts by the Colorado Division of Wildlife to stem or reverse the decline in the State's mule deer populations.

Reductions in cattle use (to accommodate horse allocation) would be nominal and would have no substantive influence on current livestock effects on big game winter ranges as presented in

Alternative A. Continued season-long grazing regimens on the Texas and Oil Spring Mountain complex at 70% of current levels would not be expected to substantively alter impediments to abbreviated spring livestock use on big game winter ranges in the herd area. Indirect improvements to herbaceous forage conditions associated with horse reductions would likely be unremarkable and functionally indistinguishable from present conditions.

Grouse

Horses would continue to make season-long use of grouse brood and nest habitats in the Oil Spring/Texas Mountain area. As discussed in the big game section for this alternative, reductions in horse populations would, on average, reduce cumulative ungulate use during the late nest and brood period by about 30%. The effects of season-long grazing regimens associated with the horses would be expected to maintain current understory characteristics on those 2,400 acres of shrubland brood habitats such that little improvement in herbaceous plant vigor, ground cover density, or understory composition is expected. It is likely that the utility of grouse brood or nest habitat would remain static under this alternative. Under this alternative, cumulative ungulate use of shrubland and bottomland habitats would likely remain inconsistent with the RMP objective for herbaceous cover on grouse brood and nest habitats, as follows:

Livestock and big game management techniques will be used to retain $\geq 50\%$ herbaceous growth by weight through September 15 on grouse brood and nest habitats. (RMP ROD page 2-32)

Non-game

Because there are no effective or practical means of regulating the timing or distribution of horse grazing use patterns, their effects on vegetation can only be diluted across a landscape. Potential efforts to enhance or compensate forage-related effects on these critical big game summer range (as well as grouse) habitats may entail woodland conversions to gain notable improvements in ground cover that would meet Rangeland Standard 3 for wildlife. Assuming the design of these conversions remained consistent with RMP big game habitat objectives, the abundance and distribution of nongame species affiliated with mature woodland canopies would be subjected to long term (several hundred year) modification more or less proportional to the reduction of the woodland base.

The abundance and distribution of nongame bird and mammal populations would be expected to remain static under this alternative. Although reductions in grazing use attributable to cattle and horses is expected to reduce overall grazing intensity and improve about 4,000 acres across the herd area, it is less likely that substantive changes in effective cover height and density, as cover, forage, and forage substrate for nongame wildlife, would be realized.

Understory expression on those 3,665 acres of grassland and shrubland habitats associated with Oil Spring and Texas Mountain's preferred summer horse use areas is expected to undergo minor community level advance and temporary improvement in ground cover density when horse populations are low, but the change in use is not considered dramatic enough to elicit functional improvements in ground cover density or the accumulation of residual ground cover. Implementation of the Twin Buttes grazing plan is expected to reduce grazing use intensity on lower elevation ranges that would help initiate improving trends in plant vigor and production. However, modest increases in residual ground cover on those 8,000 acres of early and mid-seral shrublands are not expected to markedly influence the current distribution or abundance of nongame birds or mammals in the herd area.

Similar to the discussion in Alternative A, this alternative poses no risk of jeopardizing the viability of any nongame animal population.

Applicable to all Wildlife Groups

Forage compensation measures (i.e., vegetation treatments to offset forage impacts to horses, Section 4.1) would be subject to applicable big game and grouse habitat objectives and

management decisions (e.g., cover distribution and forage retention) established in the White River ROD/RMP (pages 2-26 to 2-32), as well as riparian decisions (ROD/RMP page 2-15) that pertain to upland spring sites. These decisions strive to maintain or enhance the long term utility and availability of important wildlife forage and cover resources.

ROD/RMP decisions allowed for about a 10% reduction in long term habitat capacity for woodland nongame species in the Douglas Geographic Reference Area (which encompasses the herd area) with projected average cumulative canopy modifications of about 900 acres per year. Woodland treatments in excess of about 250 acres per year would exceed the long term stand regeneration regimen and reduce the availability of mature woodland habitat for non-game animal communities.

Similarly, the development of additional waters within the herd area (i.e., when horse use of existing sources are compromised by development) would likely increase the availability and persistence of waters on big game winter ranges, thereby expanding, to an undetermined degree, the extent, duration, and intensity of collective ungulate grazing use by horses on herbaceous forage supplies (e.g., grouse, fall/spring big game use) and residual ground cover (e.g., grouse, nongame wildlife) in the herd area.

Mitigation Measures: Vegetation treatments proposed for horse management would be subject to applicable big game and grouse habitat objectives and management decisions (e.g., cover distribution and forage retention) established in the White River ROD/RMP (pages 2-26 to 2-32), as well as riparian decisions (ROD/RMP page 2-15) that pertain to upland spring sites.

Cumulative Impacts:

Alternatives A and B: Removal of horses from the West Douglas herd area would work in conjunction with improved implementation of the Twin Buttes grazing plan and wildlife objectives generated through the White River RMP to enhance the availability of herbaceous forage on up to 10% of big game critical summer range habitats in GMU 21, concomitantly enhancing effective ground cover properties and its derivative values on about 2400 acres of blue grouse nest and brood habitat and up to 6000 acres of non-game bird and mammal habitats.

Anticipated full-field development of established oil and gas fields (i.e., 80-acre spacing) encompassed by the Herd Area is expected to ultimately reduce woody forage and cover and fragment effective security cover on 12-16% of the land within a field. Oil and gas fields in the Herd Area currently support road densities of 3.0 to 4.5 miles per square mile. Within the next 20 years, at projected 80-acre well spacing, unregulated road use at 4.5 or more miles per square mile would be capable of depressing big game habitat effectiveness by 40-60 percent. This effect could ultimately depress the capacity of GMU 21's critical deer summer and general winter ranges by 10-15 percent and 15-20 percent, respectively. Similarly, the capacity of GMU 21's elk severe winter and critical summer ranges may be depressed by up to 25 and 5 percent, respectively.

Applying RMP-established road-density and habitat treatment guidelines to oil and gas development would help reduce cumulative deterioration of seasonal big game habitats by reducing effective road density and directing development, where possible, to areas of excessive cover or suboptimal forage types. Similarly, application of the RMP-approved big game critical summer range timing limitation stipulation on oil and gas activity was expected to maintain optimal utility on 56 percent of big game summer ranges and ensure that preferred cover and forage resources are available for use when young animals are most susceptible to malnourishment and predation.

Alternative B: In the near term, avoidance of oil and gas activity by horses would necessarily involve horses making increasing use of secure cover derived from the application of big-game oriented land use prescriptions. Particularly as the extent and continuity of these cover parcels diminish over time, coincident use of mutually preferred seasonal habitats (e.g., areas in closer

proximity to limited water on critical summer range) would be increasingly ceded to horses, such that horse-related effects on big game habitat utility would be additive to those attributable to oil and gas development.

4.12 Migratory Birds:

Impacts from All Alternatives: This document analyzes alternative forms of horse management in West Douglas, but authorizes no activities that risk the take of migratory birds or their nests. Inventory and gather operations commonly involve the use of aircraft and considerable ground activity, but these activities are relegated to winter and late summer (August), respectively. On the ground projects that may attend horse management in the future include vegetation treatments (e.g., prescribed fire, mechanical treatments) and water developments. These projects involve the clearing and removal of nest substrate and are typically conducted during the summer months that coincide with the nesting season (mid-May through mid-July). The need for project work, as well as its eventual scope and location, are undefined at this level of NEPA.

Mitigation Measures:

Construction of water facilities or vegetation treatments associated with horse management would be scheduled outside the migratory bird nesting season of mid-May through mid-July.

Cumulative Impacts: None.

4.13 Threatened and Endangered Animals:

Impacts from All Alternatives: With the exception of Colorado River fishes, none of the alternatives would adversely influence listed, proposed, or candidate animal species or associated habitat. Sensitive species are not discussed individually, but were incorporated, where applicable, in conjunction with terrestrial nongame discussions. Any water developments that result in depletions from the Upper Colorado River system are considered deleterious and likely to adversely affect Colorado pike-minnow and other listed Colorado River fishes. The impact of small water depletions associated with land management activities continues to be reported and mitigated by BLM via annual monetary contributions to the U.S. Fish and Wildlife Service as agreed to through the Amended Programmatic Biological Opinion for Minor Water Depletions in the Upper Colorado River Basin.

Mitigation Measures: None.

Cumulative Impacts: None.

4.14 Threatened and Endangered Plants:

Impacts from All Alternatives: All of the rare and sensitive plant species described in the Affected Environment section are narrow endemics of the Green River Geologic formation and would not be adversely affected. In general, the sites on which the plants are found provide little in the way of forage because the formation consists of barren shale and is not used by livestock (cattle) or wild horses. Any use by horses or livestock (cattle) would be incidental and not significant because the plant species are not particularly palatable to the horses or kind of livestock (cattle) permitted to graze in the area. Most of the plant species habitat occurs outside the area where the horses currently occupy. If populations are found and monitoring shows that there impacts resulting from grazing or trampling, these populations would be protected.

Mitigation Measures: Threatened, endangered and sensitive plant species found would be inventoried and monitored to determine their location and density. Populations determined to be impacted by projects would be protected or avoided. Any proposal for protection of these narrow endemics would require completion of an environmental assessment, which would determine the best means of protection.

Cumulative Impacts: Under both alternatives mitigation would require monitoring and avoidance of threatened, endangered and sensitive plant species which are expected to provide protection

for these species and habitat. Accidental loss could occur due to any form of land use and resource disturbance. Loss of some habitat could occur through the exercise of valid existing rights. This use is expected to increase above historical levels and has the potential to destroy some populations of sensitive plants. Habitat is dispersed such that some loss of sensitive plant species would not threaten existence of any species. Management actions proposed would protect and conserve habitat for all sensitive plant species.

4.15 Recreation:

Impacts from Alternatives A: The impacts to most recreational activities would be expected to be negligible with the exception of horse viewing and big game hunting. By removing wild horses the opportunity to view them would be negatively impacted.

If removal activities utilizing helicopters occur during the fall big game hunting seasons (September through November), the impact on the recreational experience to those hunters that are within sight or sound of the helicopters would likely be negative. As Game Management Unit (GMU) 21 is a draw area for mule deer this experience may be one of a lifetime for the hunter and the helicopter sight and sound is not only a personal distraction it creates perception that the constant sight and sound of the machinery will disrupt the movement of the animals making the hunt that much more difficult. Adding to the difficulty of the hunt with external unnatural activities, such as helicopter overflights, has historically caused a significant number of complaints not only from the public, but also from agencies that are charged with managing the big game populations. As gather activities should happen for the period until all wild horses are removed, it would cease following final removal operations.

Impacts from Alternative B: The impacts to most recreational activities would be expected to be negligible with the exception of horse viewing and big game hunting. By retaining wild horses the opportunity to view them will continue to persist.

If removal activities utilizing helicopters occur during the fall big game hunting seasons (September through November), the impact on the recreational experience to those hunters that are within sight or sound of the helicopters would likely be negative. As Game Management Unit (GMU) 21 is a draw area for mule deer this experience may be one of a lifetime for the hunter and the helicopter sight and sound is not only a personal distraction it creates perception that the constant sight and sound of the machinery will disrupt the movement of the animals making the hunt that much more difficult. Adding to the difficulty of the hunt with external unnatural activities, such as helicopter overflights, has historically caused a significant number of complaints not only from the public, but also from agencies that are charged with managing the big game populations. As gather activities should happen periodically as long as wild horses are managed, the impacts of gather activities will continue.

Mitigation Measures: Avoid gather and census operation during the fall big game hunting seasons (September through November) and on higher use holiday weekends such as Labor Day and the Fourth of July when an increased number of recreationists may be present.

Cumulative Impacts: As oil and gas operations are likely to continue to increase within the herd area, the long term impacts to recreation are potentially the continued degradation of Semi-Primitive Motorized dependent experiences with an increase in Roaded Natural and Rural experiences due to the increase in oil and gas infrastructure and road traffic.

4.16 Visual Resources:

Impacts from Alternative A: No impacts, all VRM objectives described in the RMP will be maintained.

Impacts from Alternative B: No impacts, all VRM objectives described in the RMP will be maintained.

Mitigation Measures: None.

Cumulative Impacts: As oil and gas activities increase within the herd area, it may begin to be increasingly difficult to maintain VRM class II objectives.

4.17 Cultural Resources:

Impacts from Alternative A: Impacts to cultural resources from wild horses would cease after total herd removal in 2007. As vegetation cover improves and erosion is reduced the impacts to cultural resources would be reduced compared to the current situation.

Impacts from Alternative B: A reduction of wild horses numbers to 29-60 and maintenance of a “thriving ecological balance”, suggests that impacts to cultural resources from trampling and scratching/rubbing would be slightly reduced from the current situation, especially in those areas of animal concentration (livestock or horses) such as around water sources or areas of thermal cover. However, since management strategies would be implemented gradually the impacts on cultural resources would decrease, but at an unknown reduced rate until Rangeland Health standards are met.

Cultural resources are also affected by erosion processes resulting from lack of or loss of vegetation cover will increase the potential to adversely impact cultural resources. Erosion compresses the stratigraphy of sites, washes away features such as hearths, post holes and occupation surfaces. Smaller artifacts are also washed away during the erosion processes presenting a somewhat skewed picture of material culture in the archaeological record. As vegetation cover improves and erosion is reduced the impacts to cultural resources would be reduced accordingly.

Mitigation Measures:

Alternative A: Current stipulations for reviewing and/or inventorying individual ground disturbing activities in the entire West Douglas Herd Area would continue as specified in the 1997 White River ROD/RMP for this alternative.

Alternative B: A monitoring program for all known eligible, listed or need data sites will be needed to determine what impacts, if any, are occurring to the sites due to the presence of horses and or livestock. Sites for which no formal register eligibility status has been determined will need to be reevaluated and their eligibility determined in accordance with appropriate regulations. Sites that are listed on the NRHP, eligible for nomination to the NRHP, or in the Need Data category that are being impacted will require physical protection measures such as fencing or data recovery excavations. Due to the size of the area, the program will need to include evaluation for impacts to cultural resources of either a fixed number of sites or a set number of acres per year.

Cumulative Impacts:

Alternative A: Trampling, rubbing, and scratching on built cultural features such as wickiups or cabins from livestock would continue to occur. These impacts would be more evident around water and in areas of thermal cover, such as within pinyon-juniper forests, where it is expected that livestock would congregate. There is a strong correlation between cultural site locations, and the presence of water and pinyon-juniper forests. Removal of all horses would eliminate that component of the impacts that can be attributed to the presence of horses in the area. Impacts that are attributable to livestock are expected to be gradually reduced as grazing management strategies are implemented to achieve the objectives of the Rangeland Health initiative. As vegetation cover improves and erosion is reduced there would be a reduction of the rate at which archaeological sites are lost due to erosion compared to the current situation.

Monitoring of sites under the range permit renewal and monitoring program would identify significant sites that would be protected through fencing or other measures and would reduce the loss of data to the regional database. Sites that are not protected would continue to be susceptible to impacts from animals.

There would also be continued potential for human development to damage or destroy unidentified cultural sites. Human development also may increase potential for illegal artifact excavation and collection due to increase site visibility and accessibility that results from road, pipeline, and well pad construction. Human development impacts would continue as before. Some development stipulations would be useful in preventing direct development impacts but indirect impacts from development and recreation would remain unchanged.

Alternative B: Impacts would be similar to Alternative A with the following exceptions. Wild horse related impacts to cultural resources such as trampling, scratching and rubbing on certain surfaces would continue to occur under this alternative. Impacts to cultural resources that can be attributed to horses would be reduced, compared to the current situation, but would not be completely eliminated under this alternative. Impacts that are attributable to livestock and horses would likely be gradually reduced as management strategies are implemented to address the Rangeland Health initiative. As management strategies are implemented, vegetation cover improves and erosion is reduced there would be a reduction of the rate at which archaeological sites are lost due to erosion compared to the current situation.

4.18 Paleontology:

Impacts from Alternative A: Impacts from wild horses would cease after total herd removal in 2007. As vegetation cover improves and erosion is reduced the impacts to paleontological resources would be reduced in comparison with current situation.

Impacts from Alternative B: Impacts from wild horses would be similar to those from livestock grazing, and include trampling on horizontal or near horizontal surfaces where animals trail or concentrate, where fossil bearing outcrops occur. On vertical faces of critical outcrops there is a potential impact from rubbing and scratching. However, at the present time the nature and extent of impacts from livestock grazing and wild horse activity are not well documented for the herd area.

Paleontological resources are also affected by erosion processes resulting from lack of, or loss, of vegetation cover will continue until animal numbers are reduced as a result of monitoring for Rangeland Health standards. Erosion impacts primarily affect smaller fossil remains which are washed away as a formation weathers and erosion transports fine soils and smaller sized particles, including smaller fossil specimens, off site. Impacts from erosion would be reduced as ground cover from vegetation improves and erosion is reduced.

Mitigation Measures:

Alternative A: Current stipulations for reviewing and/or inventorying individual ground disturbing activities in the entire West Douglas Herd Area would continue as specified in the 1997 White River ROD/RMP for this alternative.

Alternative B: Current stipulations for reviewing and/or inventorying individual ground disturbing activities in the entire West Douglas Herd Area would continue as specified in the 1997 White River ROD/RMP for this alternative. Study plots should be established on selected fossil localities within the herd area and a study conducted to better quantify the nature and extent of impacts from wild horse activities in the Herd Management area under Alternative B. The extent of the study shall be commensurate with the extent of wild horse occupation and be proportional to the acreages of the various fossil bearing formations within the herd areas for the alternative. Whenever possible, range enhancements for livestock or horses should be designed to direct animals away from scientifically important fossil localities to prevent trampling impacts to the fossils as a result of animal concentrating/congregating.

Cumulative Impacts:

Alternative A: With the total removal of horses in 2007 the impacts attributable to horses would be eliminated. Impacts attributable to livestock would continue and would be the major animal

impact component. As grazing management strategies are implemented to achieve Rangeland Health standards the impacts would be slightly reduced. As range improvement projects are developed and designed to direct animals away from significant fossil localities impacts would be reduced at those localities. Impacts at previously unrecorded localities would continue as they do at the present time.

Impacts from human development would continue, subject to mitigation measures as outlined in the 1997 RMP and those listed above. Some impacts would be avoided but some such as those related to unstructured recreation, for example, would continue unchanged from the current situation.

Alternative B: Livestock and wild horse related impacts to fossil resources would be expected to continue as before. Impacts attributable to livestock would continue and would be the major animal impact component. As livestock grazing management strategies are implemented to achieve Rangeland Health standards the impacts would be slightly reduced. As range improvement projects are developed and designed to direct animals away from significant fossil localities impacts would be reduced at those localities. Impacts at previously unrecorded localities would continue as they do at the present time.

Cumulative Impacts from human development would be the same as Alternative A.

4.19 Access and Transportation:

Impacts from Alternative A: There would be no impacts to access or transportation from this alternative.

Impacts from Alternative B: There would be no impacts to access or transportation from this alternative.

Mitigation Measures: None.

Cumulative Impacts: Alternatives A and B: With the likely increase in oil and gas development within the herd area, it is likely that the local transportation system will increase both in size and in traffic use numbers.

4.20 Forest Management:

Impacts from Alternatives A & B : Forest and woodland harvest limits as described in the White River ROD/RMP would be implemented. Personal harvest of firewood in the Herd Area is expected to continue to focus on trees removed as a result of oil and gas development. The forest and woodland management program would be unaffected.

Mitigation Measures:

Mitigation measures/stipulations would be determined through a site specific Environmental Assessment for any forest or woodland projects.

Cumulative Impacts:

Alternatives A & B: Cumulative impacts to forest and woodlands would be related to human development. Human development is expected to impact 330 acres short term and 5,600 acres long term of predominantly pinyon/juniper woodland, within the herd area. Over the short term human development would exceed the ten year harvest level by 30 acres. Over the long term human development would exceed the harvest limit by approximately 4,100 acres.

4.21 Socio-Economics:

Impacts for All Alternatives: No significant grazing related socio-economic impacts are projected at the county level for any of the alternatives in this EA however specific grazing permittees may be affected. The AUMs by Permittee table below shows specific impacts of each alternative to the 3 permittees in the West Douglas planning area. Determining the effect that changes in AUM

allocation has on the profitability of each Permittee is well beyond the scope of this document however the number of livestock grazed may be used as an indicator of the effect on each permittee.

AUMs by Permittee

Operator	Alternative A	Alternative B
Bull Draw	187	187
Twin Buttes	8496	7746
J. Steele	407	407

The Twin Buttes Permittee is affected under Alternative B with a loss of 750 AUMs which is the equivalent of losing 63 cattle from the operation.

Impacts from Alternative A: Projected Trends in population, employment and income for Rio Blanco County would be as described in the Affected Environment Section.

BLM Administrative Costs: Under Alternative A, approximately 120 wild horses would be gathered and removed from West Douglas by the year 2007. Expected costs for gathering and adoption are estimated \$499,000.00. If costs are spread over 20 years for the purpose of comparison with the other alternatives, annual direct costs are equal to \$25,000.

No other significant economic changes are expected as a result of adopting this alternative, including: 1) no significant change in the number of AUMs grazed by permittees, currently valued at \$12984 with an estimated market value of \$90,800; 2) No significant change in hunting or recreation use is expected; 3) no significant change is projected in oil and gas revenues or royalties associated with them.

Impacts from Alternative B: Alternative B causes no significant changes in population, employment, or income. There is a potential job loss of one employee in the ranching sector as reduced forage allocation reduces permittee income. Forage allocation to cattle is reduced to a value of \$9,007 with a market value estimated at \$62990.

The administrative cost of maintaining the small West Douglas herd under Alternative C is estimated as direct costs of \$806,000. Over a 20 year planning horizon this alternative produces estimated annual direct costs of \$40,300.

Mitigation Measures: None

Cumulative Impacts: None

4.22 Cumulative Impacts: Cumulative impacts from each alternative are addressed by resource in the above paragraphs of this section, at various geographic scales. Cumulative impacts include grazing (wildlife, wild horse, and livestock) effects on vegetation, riparian areas, water, and soils at the affected riparian site, pasture, watershed, and herd area scale. Cumulative impacts to wildlife (e.g. oil and gas development and grazing) are addressed at the habitat, herd area, and regional geographic scales. Resource paragraphs also discuss impacts from oil and gas, and associated infrastructure (roads, pipelines, etc.) within key and preferred wild horse habitat, as well as for the entire herd area. The Socio-economic section addresses economic impacts at the county level, and (for the BLM wild horse fiscal program) at the state level. Refer to the appropriate resource section for a detailed discussion on cumulative impacts pertinent to a specific resource.